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SKETCHES
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DIAGRAMS

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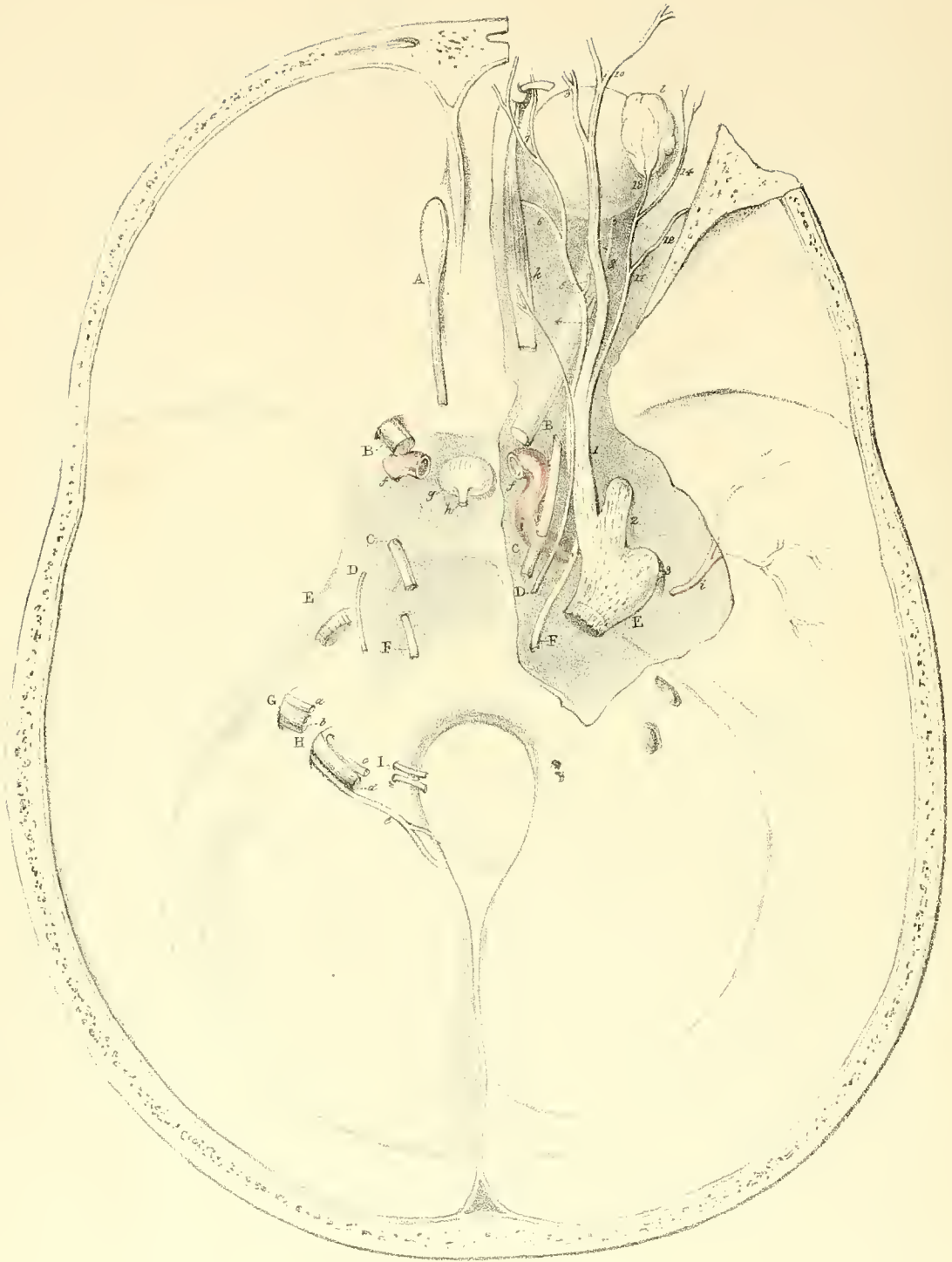


PLATE 1.

ON the left side, are exhibited the Cerebral Nerves, in the order in which they pierce the Dura Mater, to reach their respective foramina, in the base of the skull.

- A. The first Cerebral Nerve or Olfactory, with its bulb resting upon the Cribriform Plate of the Ethmoid bone.
- B. The Second or Optic, divided after its decussation with the opposite nerve, and before it reaches the Foramen Opticum, where it is placed in front of the internal Carotid Artery, *f*.
- C. The Third, or Motor Oculi, piercing the Dura Mater, to enter the Cavernous Sinus,
- D. The Fourth, or Trochlearis, passing under the edge of the Tentorium, before the latter is attached to the Posterior Clinoid process.
- E. The Fifth, or Trigemini, piercing the Dura Mater posteriorly, and a little to the outer side of the Fourth.
- F. The Sixth, or Abducens Oculi, penetrating the Dura Mater, opposite to the point where the apex of the petrous portion of the Temporal bone joins the Occipital.
- G. The Seventh, consisting of,—*a* the Facial, *b* the Auditory, passing into the Meatus Auditorius Internus.
- H. The Eighth, consisting of,—*c* the Glosso-Pharyngeal; *d* the Nervus Vagus; *e* the Nervus Accessorius, passing through the anterior part of the Foramen Jugulare. The Glosso-Pharyngeal generally has a distinct opening in the Dura Mater.
- I. The Ninth, or Motor Linguae, penetrating the Dura Mater in two, and sometimes more, distinct fasciculi, to pass through the Foramen Condylodeum Anterius.

On the right side, the Dura Mater is reflected from a part of the base of the skull, to show the relative situations of the several objects in the Cavernous Sinus; the roof, and also a portion of the outer wall of the Orbit have been removed to exhibit chiefly the distribution of the First or Ophthalmic branch of the Fifth Nerve.

Of the Nerves in the Cavernous Sinus, the Third, C., is the most internal—next we observe the Fourth Nerve, D., which, on entering the Orbit by the Fissura Lacera, passes

over the Ophthalmic division of the Fifth, and is distributed to the Superior Oblique Muscle *k*. The Ophthalmic division of the Fifth, lies still more externally in the Cavernous Sinus. The Sixth, *F.*, is placed deeply between the Fourth and Ophthalmic division of the Fifth, and situated close to the Internal Carotid Artery *f*, as it emerges from the apex of the petrous portion of the Temporal bone.

E. The Ganglion Gasserianum of the Fifth pair dividing into :—

1. The Ophthalmic which enters the Orbit through the Fissura Lacera.
2. The Superior Maxillary, passing through the Foramen Rotundum.
3. The inferior Maxillary, passing through the Foramen Ovale. Close to the outer side of the Inferior Maxillary Nerve, is the Arteria Meningea Media, *i*, entering the skull through the Foramen Spinosum of the Sphenoid Bone.

The Ophthalmic dividing into—

4. The Nasal.
8. The Supra Orbital or Frontal; and,
11. The Lachrymal.

The Nasal gives off two Ciliary Nerves, which have been separated, 5; The branch, 6, which passes through the Foramen Orbitale Internum Anterius, first into the Cranium, and then descends into the Nose, through an opening close to the base of the Crista Galli of the Ethmoid bone;* lastly, the Infra-Trochlear Nerve, 7.

The largest branch of the Ophthalmic is the Supra Orbital or Frontal, 8, which gives off the Supra-Trochlear Nerve, 9, and branches, 10, which pass through the Supra Orbital Notch or Foramen to the forehead.

The smallest division of the Ophthalmic is the Lachrymal, 11, which gives off the Malar Nerve, 12, branches to the Lachrymal Gland, *l*, 13, branches to the Eyelids, 14.

* Its termination is seen in Plates 2 and 3.

Fig 1.

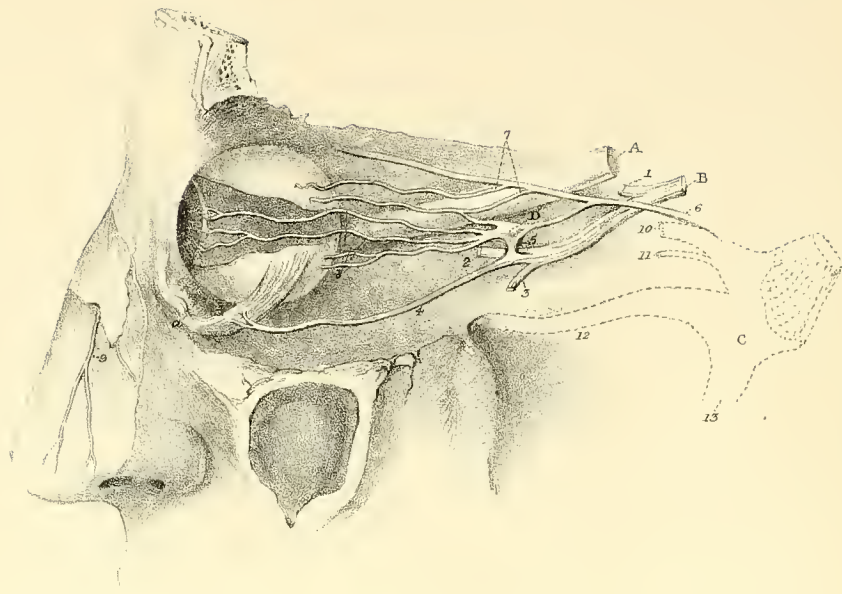


Fig 2.

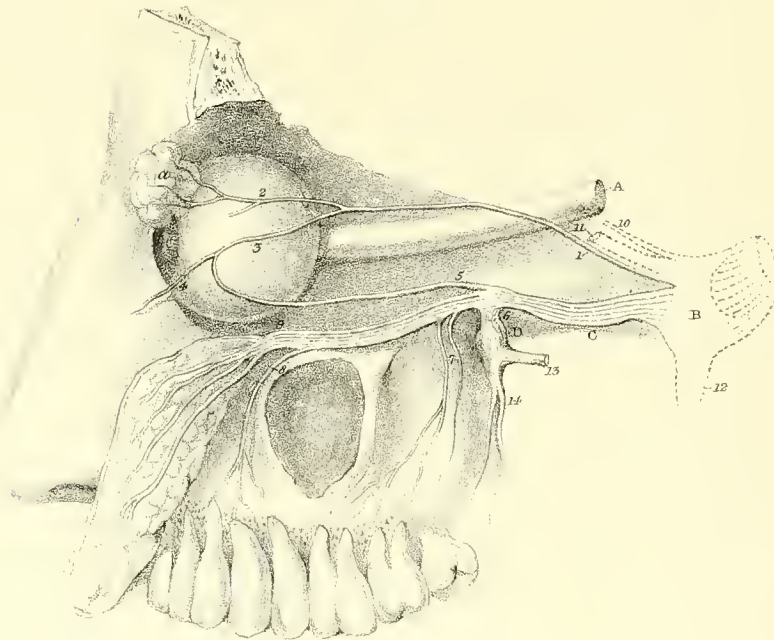


PLATE 2.

FIG. 1.

The outer wall of the orbit has been removed for the purpose of exhibiting the connections of the Lenticular Ganglion, with one of the branches of the third pair, and with the Nasal branch of the Ophthalmic Division of the Fifth.

- A. The Optic Nerve.
- B. The Third, or Motor Oculi. All its branches have been divided close to the trunk, excepting that which is connected with the Lenticular Ganglion.
- C. The Ganglion Gasserianum, in dotted outline.
- D. The Lenticular Ganglion.
- 1. Branch of the Third Nerve which supplies the Levator Palpebræ superioris and the Rectus Superior Oculi.
- 2. Branch to the Rectus Internus.
- 3. Branch to the Rectus Inferior.
- 4. Branch to the Obliquus Inferior, *a*.
- 5. The Communication between the last named branch of the Third and the Lenticular Ganglion, D.
- 6. The Nasal Branch of the Fifth sending off, first, a branch of communication with the Lenticular Ganglion, D.
- 7. Two long Ciliary Nerves from the Nasal.
- 8. Some of the Ciliary Nerves from the Lenticular Ganglion. A portion of the sclerotic has been removed to shew two of them in their passage forward, between this tunic and the Choroid, to penetrate the Ciliary Ligament.
- 9. One of the ultimate branches of the Nasal Division of the Ophthalmic, emerging between the Nasal Bone and Cartilage to ramify upon the tip of the nose*.
- 10. The trunk of the Supra-orbitar Nerve.
- 11. The Lachrymal Nerve.
- 12. The Superior Maxillary.
- 13. The Inferior Maxillary, in dotted outline.

* The other branches of the Nasal are represented in Plates 1 and 3.

FIG. 2.

Exhibits the Lachrymal Nerve, and the Second division of the Fifth, or the Superior Maxillary Nerve.

- A. The Optic Nerve.
- B. The Ganglion Gasserianum, in dotted outline.
- C. The Superior Maxillary nerve,
- D. The Spheno-Palatine Ganglion—or Ganglion of Meckel.
 - 1. The Lachrymal nerve giving off,
 - 2. Branch to the Lachrymal gland, *a*.
 - 3. Malar nerve to join a branch from the Superior Maxillary.
 - 4. Filament which passes through a foramen in the malar bone to the face
- C. The Superior Maxillary nerve, which gives off
 - 5. The Branch of communication with the Lachrymal, and which passes through the Pterygo-Maxillary Fissure.
 - 6. Filaments descending to join the Spheno-Palatine Ganglion, D.
 - 7. Posterior Dental Nerves, penetrating the foramina in the Tuberosity of the Superior maxillary bone, to supply the molar teeth.
 - 8. Anterior Dental Nerve passing through a canal in the anterior wall of the Antrum, to supply the front teeth.
 - 9. The continuation of the Superior Maxillary nerve, or Infra-Orbital Nerve, emerging from the Infra-Orbital Foramen, and dividing into a mesh of filaments, distributed to the face.
- 10. The Nasal Nerve.
- 11. The Supra-orbital.
- 12. The Inferior Maxillary.
- 13. The Vidian.
- 14. Palatine Nerves.

Fig 1

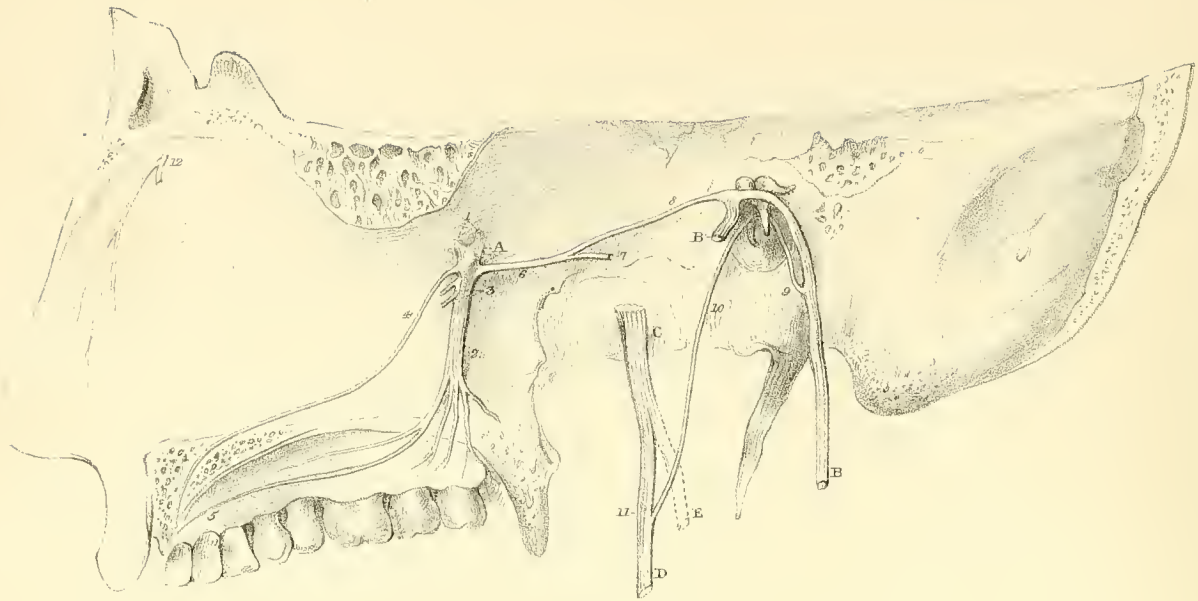


Fig 2



PLATE 3.

FIG. 1

A vertical section of the skull to exhibit an internal view of the Spheno Palatine Ganglion, and some of its Branches,—also a part of the course of the Superior or Cranial division of the Vidian, and its connexions with the Gustatory Branch of the Fifth, and with the Portio Dura of the Seventh.

A. The Spheno Palatine Ganglion, or Ganglion of Meckel.

1. The filaments of connexion between the Spheno Palatine Ganglion, and the Superior Maxillary Nerve which have been divided.
 2. The posterior Palatine Nerves.
 3. The Spheno-Palatine or Nasal Nerves, divided.
 4. The long Nasal Nerve, or Nerve of Cotunnus which passes under the body of the Sphenoid Bone, by the side of the Septum to the Foramen Incisivum.
 5. One of the branches of the posterior Palatine Nerves which passes forwards along the roof of the mouth, to the Foramen Incisivum.
 6. The Vidian Nerve which passes backwards through the canal at the base of the Pterygoid Process and divides into—
 7. The Inferior or Carotid Branch which has been divided—its connexions are represented in the next figure.
 8. The Superior or Cranial Branch which passes through the Foramen Lacerum basis Cranii Anterioris to reach the anterior surface of the petrous portion of the Temporal Bone. Here it enters the Hiatus Fallopii to join—
- B. The Portio Dura in the Aquæductus Fallopii.
9. The Chorda Tympani supposed to be a continuation of the Superior or Cranial branch of the Vidian 8, reflected back from the Portio Dura just before this nerve emerges from the Stylo-mastoid Foramen; it enters the Tympanum through the Foramen Chordæ, and is seen passing between the handle of the Malleus and the long process of the Incus.
 10. The continuation of the Chorda Tympani after it has left the Cavity of the Tympanum through a small Foramen on the inner side of the Fissura Glasseri.
 11. Junction of the Chorda Tympani with the Gustatory Branch of the Fifth, D,—its further course is given in Plate 5.

12. The Nasal Branch of the Fifth, which has entered the nose through one of the Foramina in the cribriform plate of the Ethmoid Bone, giving branches to the Septum and to the spongy bones, which are removed.
- B. The Portio Dura.
- C. The Inferior Maxillary, dividing into—
- D. The Gustatory.
- E. The Dental.

FIG. 2.

The outer wall of the Canalis Carotideus on the left side has been removed, to exhibit the Plexus formed around the Internal Carotid Artery by the communications between the Inferior or Carotid Branch of the Vidian, the Sixth nerve, and the Superior Cervical Ganglion of the Sympathetic.

- A. The Internal Carotid Artery.
- B. The Superior Cervical Ganglion of the Sympathetic.
- C. The Sixth Nerve lying on the outer side of the Internal Carotid Artery in the Cavernous Sinus.
- D. The Spheno-Palatine Ganglion.
 1. The Vidian which passes through the Pterygoid Canal, in dotted outline.
 2. The Superior, or Cranial Branch divided.
 3. The Inferior or Carotid Branch.
 4. The Branches of communication with the Sixth Nerve, which becomes enlarged after this junction.
 5. Two branches of communication with the Sympathetic, B.
 6. The Superior Maxillary Nerve in faint outline.

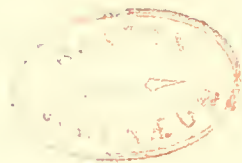


Fig 1.

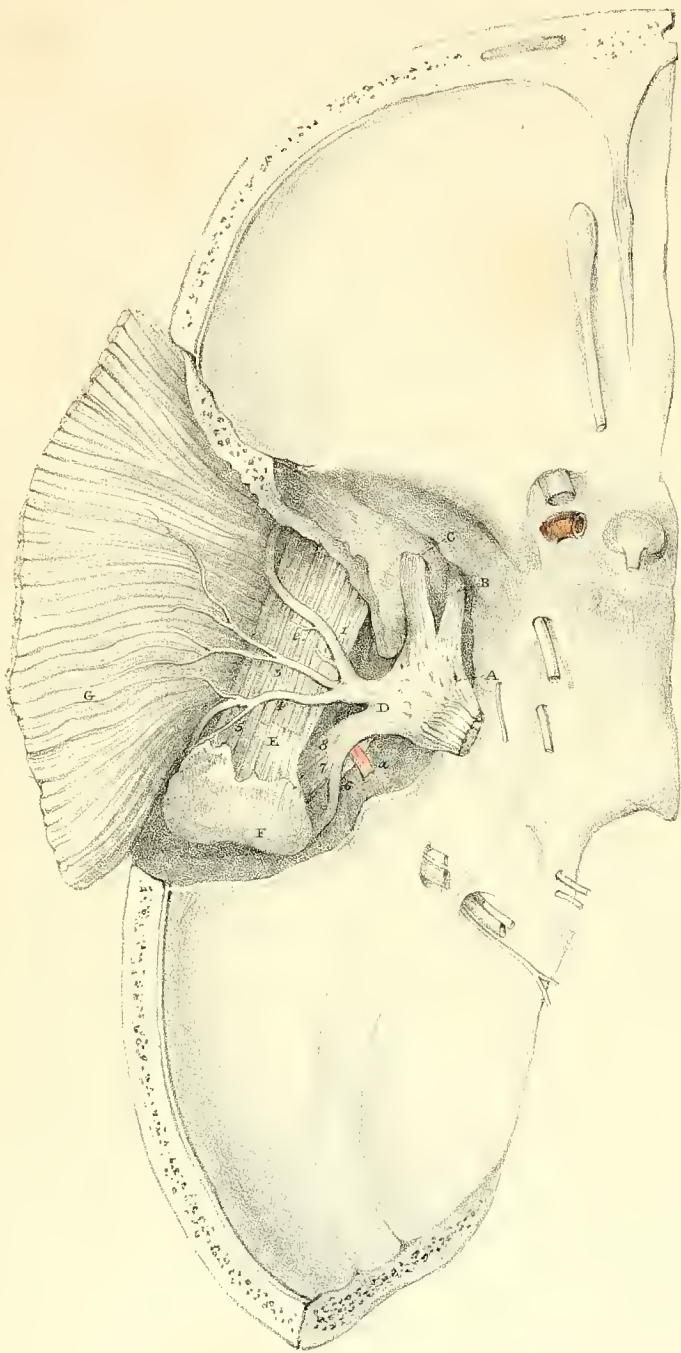


Fig 2.

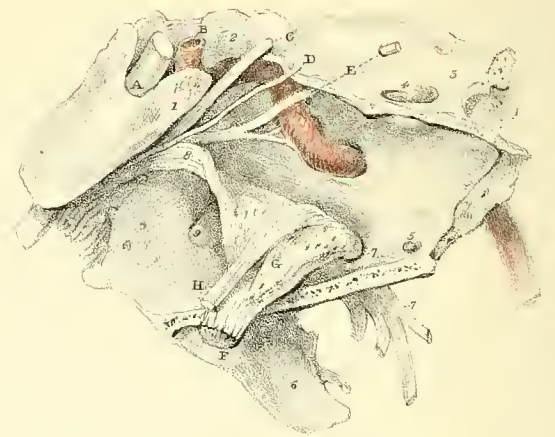


PLATE 4.

FIG. 1.

Portions of the Temporal and of the Sphenoid bones have been removed for the purpose of bringing into view the distribution of the third division of the Fifth or Inferior Maxillary Nerve.

- A. The Ganglion Gasserianum.
- B. The Ophthalmic Division.
- C. The Superior Maxillary.
- D. The Inferior Maxillary.
- E. The Pterygoideus-externus Muscle—some of the superficial fibres have been removed.
- F. The Inter-articular Cartilage covering the condyle of the lower Jaw.
- G. The Temporal Muscle
 - 1. The Buccal-Nerve, giving off filaments to the Ptergoideus-externus muscle, 2.
 - 3. Deep Temporal Nerve—distributing its branches to the Temporal Muscle.
 - 4. Masseteric Nerve, passing between the condyle and the coronoid process of the lower jaw, giving off filaments, sometimes to the external Pterygoid and Temporal Muscles, and a branch to the Capsule of the lower jaw, 5.
 - 6. The Temporo-Auricular Nerve, originating by two roots, between which the Arteria Meningea Media, *a*, is seen. This nerve passes between the neck of the lower jaw, and its internal lateral ligament.
 - 7. The Dental Nerve.
 - 8. The Gustatory.—The course and distribution of the last two nerves are given in Plate 5.

FIG. 2.

Part of the fossa of the left side, which supports the middle lobe of the brain, has been detached from the base of the Skull, for the purpose of exhibiting the parts in the Cavernous Sinus, and the two portions which compose the Fifth Nerve. In this view the bone is a little inclined

to one side, and the Ganglion Gasserianum has been turned forwards from the anterior surface of the petrous portion of the Temporal bone, to show its under surface.

1. The Anterior Clinoid process of the left side.
2. The Posterior Clinoid process.
3. The point of the Petrous portion of the Temporal bone.
4. The aperture in the Dura Mater, through which the Fifth nerve passed.
5. The Foramen Spinosum.
6. The External Pterygoid plate.
 - A. The Optic Nerve,
 - B. The Internal Carotid Artery
 - C. The Third Cerebral Nerve.
 - D. The Fourth
 - E. The Sixth.
 - F. The larger portion of the Fifth, forming
 - G. The Gasserian Ganglion.
 - H. The smaller portion of the Fifth lying in a groove on the under surface of the Ganglion—it joins the Inferior Maxillary Nerve, 7.
8. The Ophthalmic Nerve.
9. The Superior Maxillary.

Fig 1.

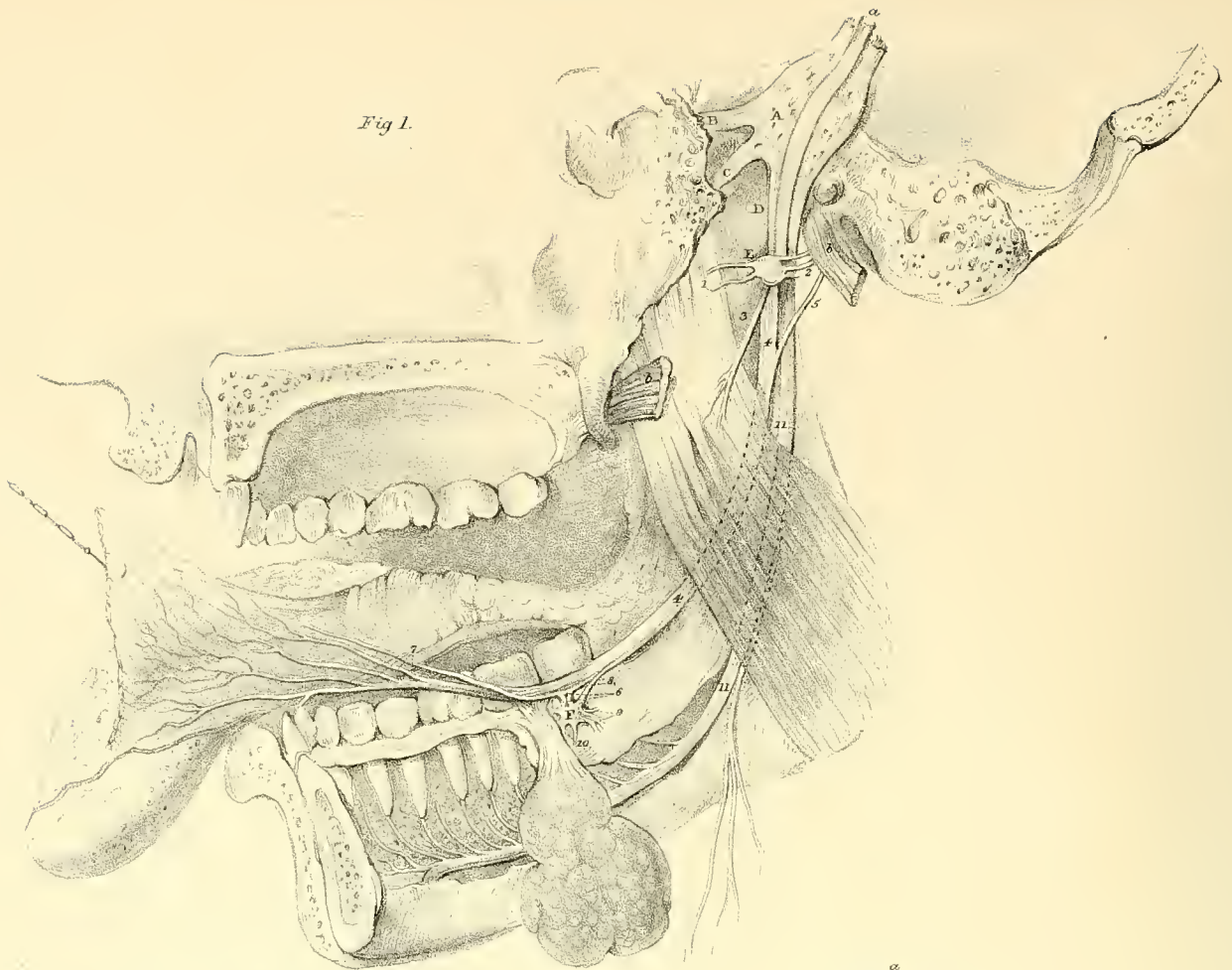


Fig 2

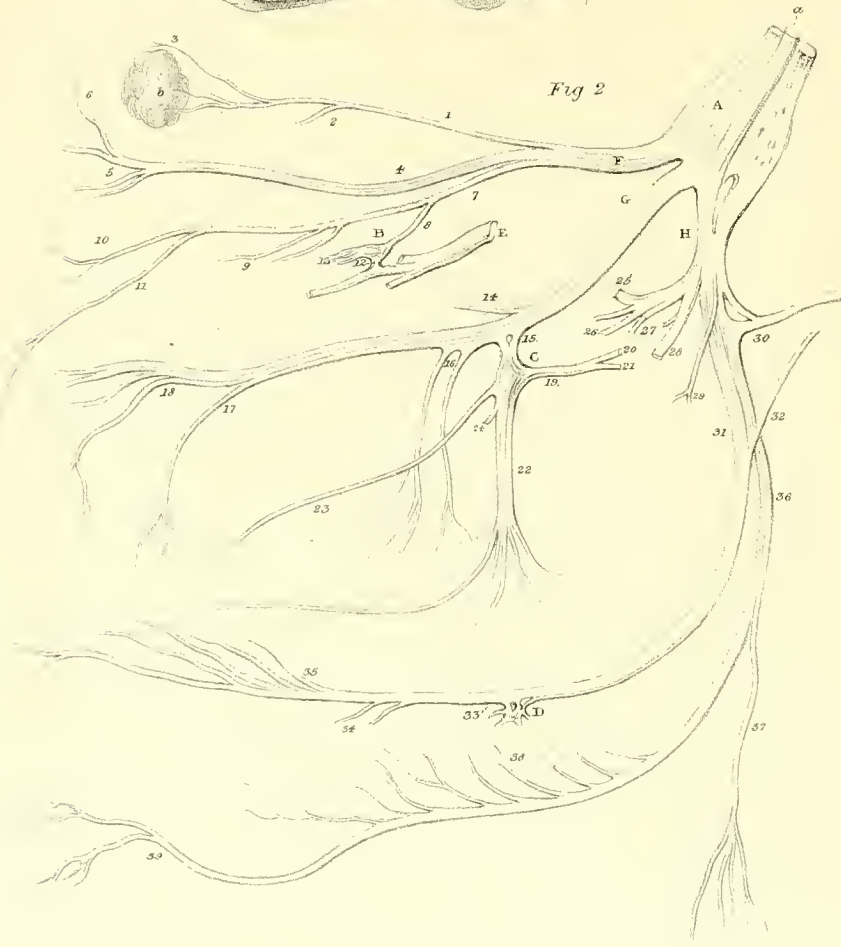


PLATE 5.

FIG. 1.

A section of the Skull,—exhibiting an internal view, on the right side, of the Ganglion Gasserianum; the Otic and Submaxillary Ganglia,—and the course and distribution of the branches of the Inferior Maxillary Nerve, which were omitted in Plate 4.

The right half of the Tongue has been separated from its connection with the Os Hyoides, and lies between the cheek and the teeth.—The Genio-Hyglossus of that side is also separated from its connection with the Os Hyoides and the lower jaw, and raised by a hook.

- A. The Ganglion Gasserianum,— *a*. the smaller portion of the Fifth.
- B. The First division of the Fifth, or the Ophthalmic.
- C. The Second Division, or the Superior Maxillary.
- D. The Third Division, or the Inferior Maxillary.
- E. The Otic Ganglion, connected with and placed on the inner side of the Inferior Maxillary Nerve, immediately below the Foramen Ovale. The Cartilaginous part of the Eustachian Tube has been removed, and the Circumflexus Palati, *b*, has been divided to expose the Ganglion.—The Anterior Branches, 1, are for the supply of the Eustachian Tube, and the Circumflexus Palati Muscle.—The Posterior Filaments, 2, pass backwards to the Tympanum.
3. The Internal Pterygoid Nerve from the Third Division of the Fifth Pair passing down from beneath the Otic Ganglion.
4. The Gustatory Nerve joined by the Chorda Tympani, 5—the course of the former and of the Dental underneath the Pterygoideus Internus Muscle, is indicated by dotted lines. The Gustatory gives off—branches, 6, to the Submaxillary Ganglion, F, to the Submaxillary and Sublingual Glands, to the mucous membrane of the mouth, and to the apex and sides of the Tongue, 7.
- F. The Submaxillary Ganglion connected with the Gustatory by the Filaments, 6,— with the termination of the Chorda Tympani, 8,— with the Sympathetic through the Medium of the Filaments, 9. Branches from the Ganglion, 10, are distributed to the Submaxillary and Sublingual Glands.

11. The Dental Nerve giving off the Mylo-hyoidean Branch, which is represented by dotted outline in the situation where it passes through the groove on the inner side of the Ramus of the lower jaw. The Dental is then continued onwards in its canal and supplies the whole of the lower teeth ; its final termination is seen in Fig. 2.

FIG. 2.

Is a plan of the Fifth Cerebral Nerve of the right side.

- A. The Ganglion Gasserianum, *a*, The smaller portion of the Fifth Nerve.
 B. The Lenticular Ganglion.
 C. The Spheno-Palatine Ganglion.
 D. The Submaxillary Ganglion.
 E. A portion of the trunk of the Third Cerebral Nerve.
 F. The First Division of the Fifth, or the Ophthalmic.
 G. The Second Division, or the Superior Maxillary.
 H. The Third Division, or the Inferior Maxillary.
 F. The First Division of the Fifth, or Ophthalmic, dividing into the Lachrymal, the Supra-Orbital, and the Nasal.
1. The Lachrymal, supplying the Lachrymal Gland, *b*, and giving off :—The Malar Nerve, 2, branches to the Palpebræ, 3.
 4. The Supra-orbital Nerve giving off : branches which pass through the Supra-Orbital notch to the forehead, 5, and the Supra-Trochlear Nerve, 6.
 7. The Nasal Nerve giving off first ; the branch of connexion with the Lenticular Ganglion, 8 ; two long Ciliary Nerves, 9 ; the branch which may be considered as the continuation of the Nasal itself, and which passes through the Foramen Orbitale Internum Anteriorius to the nose, 11 ; the Infra Trochlear Nerve, 10.
- The Lenticular Ganglion, B, is also seen to be connected with that branch of the Third supplying the Obliquus Inferior Oculi, 12, — Ciliary Nerves from the Ganglion, 13.
- G. The Second Division, or the Superior Maxillary giving off—
14. The Malar Nerve, which joins the Malar branch of the Lachrymal.
 15. Branches of communication with the Spheno-Palatine Ganglion.
 16. Posterior Dental Nerves.
 17. Anterior Dental Nerves.
 18. Continued trunk dividing into infra-orbital branches.
- C. The Spheno-Palatine Ganglion.—The branches which originate from it are :—

19. The Vidian, which divides into the Superior or Cranial Branch, 20; the Inferior or Carotid Branch, 21.
22. Posterior Palatine Nerves.
23. Long Nasal or Nerve of Cotunnus.
24. Spheno-Palatine, or Nasal.
- H. The Third Division of the Fifth, or the Inferior Maxillary Nerve, giving off—
25. The Masseteric.
26. The Temporal.
27. The External Pterygoid.
28. The Buccal.
29. The Internal Pterygoid.
30. The Temporo-Auricular.
31. The Gustatory, joined by the Chorda Tympani, 32, and furnishing branches to the Submaxillary Ganglion, 33, branches to the Salivary Glands, and Mucous Membrane of the Mouth, 34, branches to the Tongue, 35.
36. The Dental, giving off the Mylo-Hyoidean Branch, 37, and branches to the whole of the Teeth of the lower Jaw, 38. Continuation of the Dental through the Mental Foramen, 39.

PLATE 6.

This Diagram exhibits the different Spaces formed by the Muscles of the Neck, and upper part of the Chest, with the lower Jaw and Clavicle. An accurate acquaintance with the boundaries of these spaces is particularly useful to the student, and absolutely necessary to the practical surgeon.

- A. The space bounded by the Lower Jaw and the Digastricus Muscle, enclosing, superficially, portions of the Mylo-hyoideus, 3, and Hyoglossus Muscles, 5.
- B. The space bounded above and anteriorly by the Posterior belly of the Digastricus, 2, below and anteriorly by the upper portion of the Omo-hyoideus muscle, 4, and posteriorly by the anterior edge of the Sterno-cleido-mastoideus.
- C. The space bounded in front by the Sterno-cleido-mastoideus Muscle, 1; posteriorly by the Trapezius, 8; and below, generally, by the inferior portion of the Omo-hyoideus muscle, 4, and Clavicle. Within this space are enclosed—a portion of the Splenius Capitis, 9; Levator Scapulæ, 10, 10, 10; and the conjoined Scalenus medius and posticus, 11. Where the clavicular portion of the Sterno-cleido-mastoideus is unusually narrow, the Scalenus anticus is also partly visible at its outer edge.
- D. The space bounded anteriorly by the Sterno-cleido-mastoid muscle; above by the inferior portion of the Omo-hyoideus; and below by the Clavicle. This space varies much in extent in different individuals, and is especially altered in form and size by the elevation and depression of the Clavicle.
- E. Space between the clavicular and sternal attachments of the Sterno-cleido-mastoideus muscle; it varies much in size, and does not always exist.
- F. Space bounded anteriorly by the Clavicular portion of the Pectoralis Major; posteriorly by the Deltoid, and above by the Clavicle. There is sometimes no separation between the fibres of these two muscles in this situation.
- G. Space between the Clavicular and Sternal portions of the Pectoralis major. Occasionally there is no line of division between these two portions.

1. 1. The Sterno-cleido-mastoideus Muscle.
2. 2. The Digastricus.
 3. The Mylohyoideus.
4. 4. The Omo-hyoideus.
 5. The Hyo-glossus.
 6. The Sterno-hyoideus.
 7. The Sterno-thyroideus.
 8. The Trapezius.
 9. The Splenius capitis.
10. 10. 10. The Levator Scapulæ.
11. Conjoined Fibres of the Scalenus medius and posticus.
12. Deltoid.
13. 13. Pectoralis Major.



PLATE 7

Represents the Portio Dura of the seventh pair of Cerebral nerves and the superficial branches of the Cervical Plexus.

- A. The Portio Dura, the branches of which spreading upon the side of the head and face form the Pes anserinus.

The superior branches communicate with the different filaments of the first or Ophthalmic division of the fifth pair, which emerge from the orbit, and also with the Infra Orbital branch of the superior Maxillary or second division of the fifth pair. (These different branches are represented in plates 1 and 2.)

The inferior branches of the Portio Dura communicate with the inferior Maxillary or third division of the fifth pair of nerves, and with the superficial branches of the Cervical Plexus.

- B. The Malar nerve from the fifth pair (Its origin is represented in Plate 2).
 C. The Superficial Temporal or Temporo-auricular branch of the third division of the fifth pair (Its origin is represented in Plate 4).
 D. The Buccal nerve (Its origin is represented in Plate 4).
 E. The Cervical Plexus emerging from beneath the posterior edge of the Sterno-cleido mastoideus.
 F. The Nervus Accessorius passing through a loop formed by the small Occipital nerve, 9.
 G. The great Occipital nerve, penetrating the Complexus muscle.
 H. Part of the course of the External Jugular vein in dotted lines.

The Portio Dura gives off—

1. The Mastoid or Auricular branch, which gives filaments to the Retrahens-auris and to the Occipito-frontalis muscle.
2. The Stylo-hyoidean branch.

3. The Digastric branch.
4. Communication with the Malar Nerve B.
5. Communication with the Temporo-auricular Nerve C.
6. Communication with the Buccal nerve D.
7. Communication with the Cervical Plexus.
8. The Auriculo-Parotidean nerve, running posterior to the external Jugular Vein, divides into branches to the external ear, and to the Parotid Gland: the branch, *a*, to the latter has been cut off.
9. The small Occipital nerve ascending parallel with the posterior edge of the Sterno-cleido-mastoideus muscle.
10. Transverse branch of the Cervical Plexus which, crossing over the Sterno-cleido-mastoideus, communicates with the Portio Dura of the seventh pair 7.
- 11 & 12. Descending Cervical nerves, giving off branches in front and behind the Clavicle, and others which pass outwards towards the Acromion.

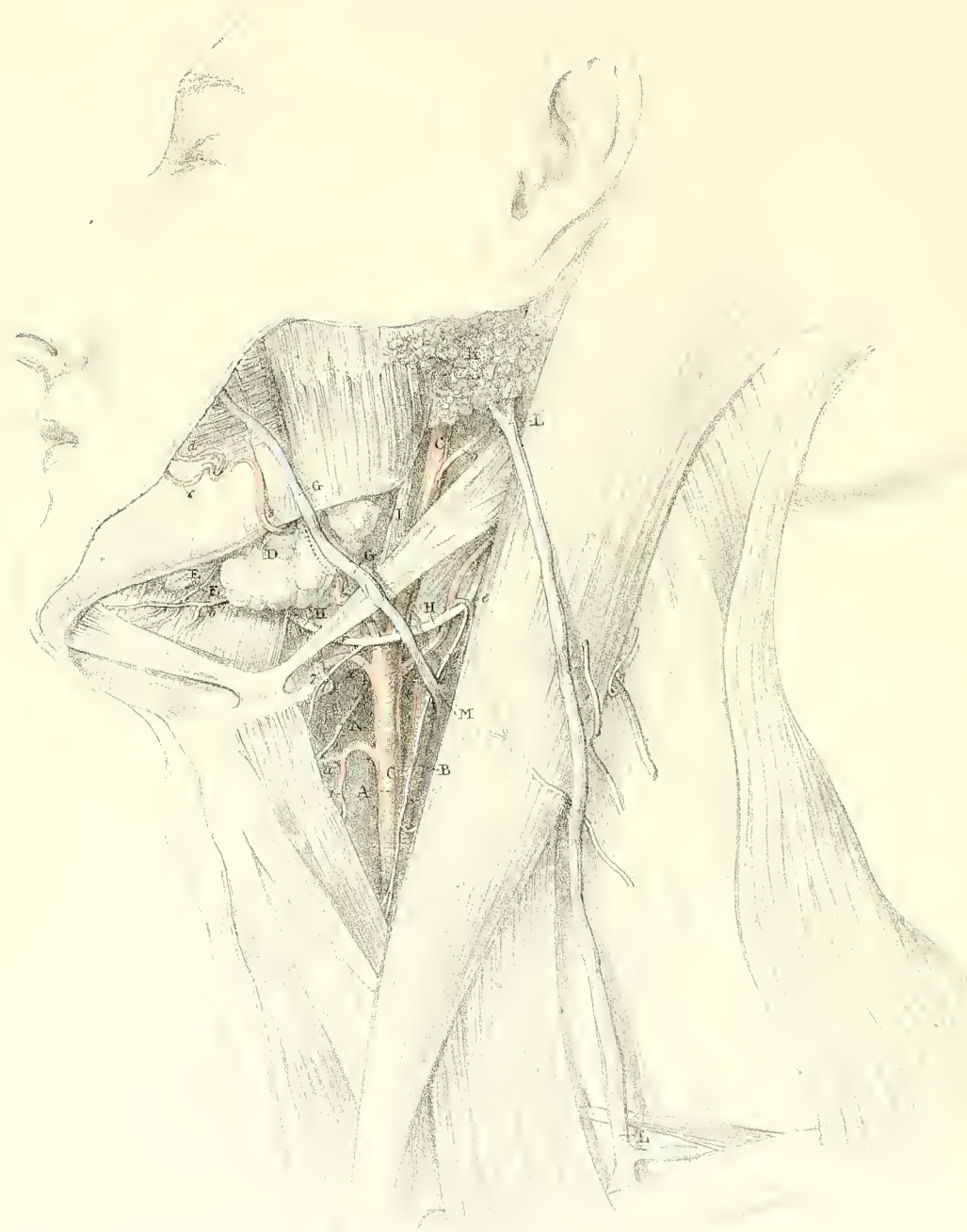


PLATE 8

Exhibits the various objects which are exposed in the upper part of the left side of the neck and lower portion of the face when the Skin, Platysma, and Fascia are removed.* This side of the lower jaw is much raised, so that it is considerably above the level of the Os Hyoides.

- A. The common Carotid Artery, dividing opposite the upper border of the Thyroid Cartilage into—
- B. The internal Carotid, and
- C.C. The external Carotid.
- D. The Submaxillary Gland.
- E. Absorbent Glands.
- F. The Mylo-hyoidean branch of the fifth pair of nerves. (Its origin is represented in plate 5.)
- G.G. The Facial vein terminating in the internal Jugular, M.
- H.H. The ninth or Hypo-glossal nerve.
 - I. Portion of Cervical Fascia, connected with the angle of the lower Jaw, with the Styloid process, and with the Os Hyoides; it separates the Submaxillary gland from the parts behind.
 - K. The Parotid Gland, a portion of which has been removed.
- L.L. The external Jugular descending obliquely upon the side of the neck and terminating in the Subclavian vein.
- M. The internal Jugular receiving the Facial vein.
- N. The superior Laryngeal branch of the Nervus Vagus, passing down from behind the Carotid Arteries to penetrate the membrane between the Os Hyoides and Thyroid cartilage.

The external Carotid gives off—

 - 1. The superior Thyroid; *a*, the superior Laryngeal Artery accompanying the nerve N.
 - 2. The Lingual Artery passing beneath the Hyo-glossus muscle.

* Comprising spaces A and B of Plate 6, in which the various muscles are enumerated.

3. 3. The external Maxillary, or Facial, passing under the posterior belly of the Digastricus and the Stylo-hyoideus muscles; its course under the Submaxillary gland is represented in dotted lines; *b*, the Submental Artery, which arises from the Facial beneath the Submaxillary gland; *c*, the inferior Coronary Artery; *d*, the continued trunk.
4. The Occipital giving off: *e*, branch to the Sterno-cleido-mastoidea, which winds around the Hypoglossal nerve, H.
5. The Posterior Auricular running above the Stylo-hyoideus to its destination at the back of the ear.
6. Descendens Noni.
7. Thyro-hyoidean branch of the ninth cerebral Nerve.

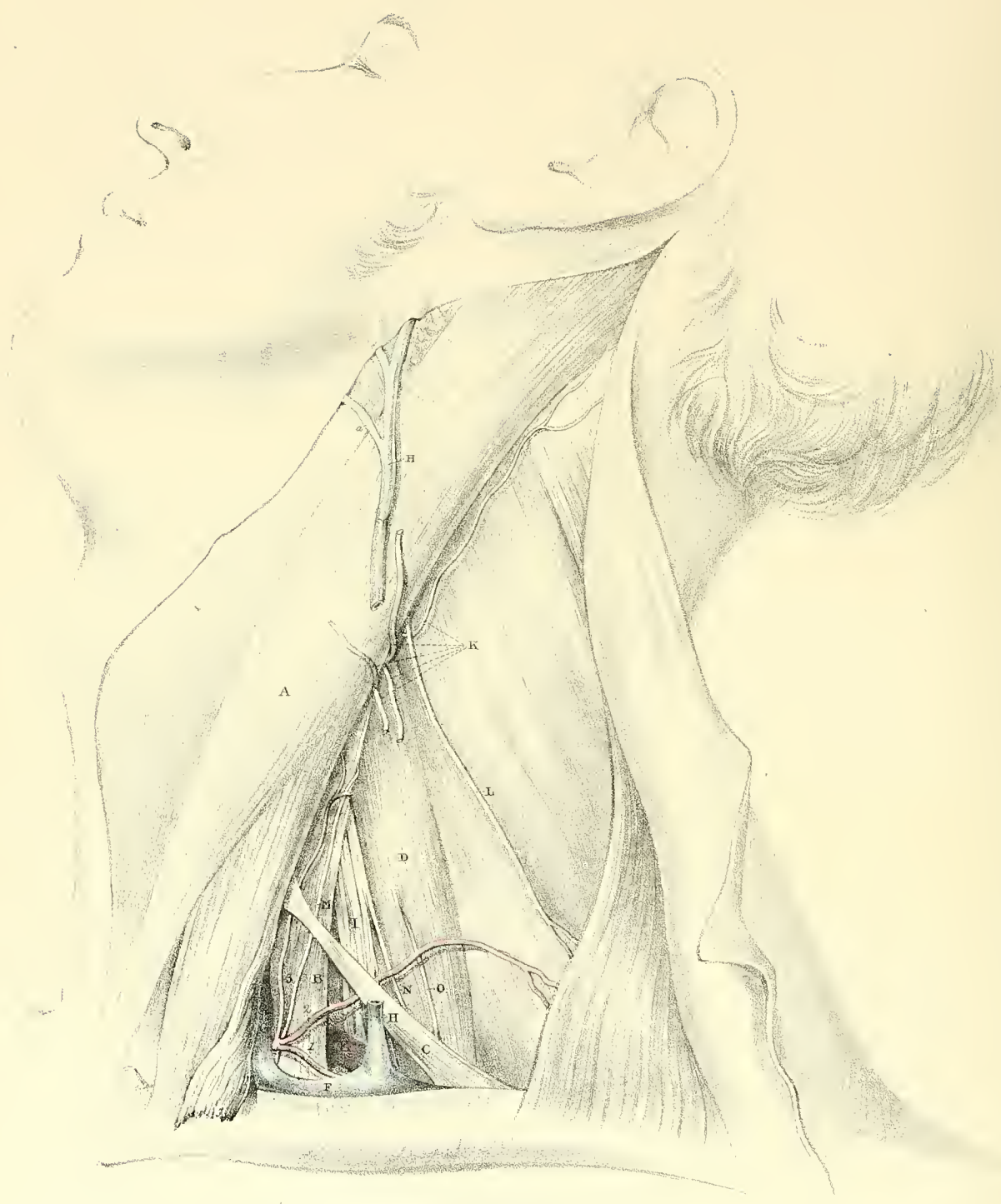


PLATE 9.

Left side of the neck, to exhibit the parts which are situated posterior to the edge of the Sterno-cleido-mastoideus Muscle* and which are brought into view on reflecting the integuments Platysma, and Fascia. The Clavicle is drawn downwards.

- A. The Sterno-cleido-mastoideus. The Clavicular portion of this muscle has been partly reflected to expose the Scalenus Anticus, and other objects in its vicinity.
- B. The Scalenus Anticus.
- C. The Omo-hyoideus. The precise situation at which this muscle crosses the neck varies much in different individuals; in some it is closely connected with the Clavicle and is scarcely visible above that bone.
- D. The conjoined fibres of the Scalenus Medius and Scalenus Posticus.
- E. The Subclavian Artery.
- F. The Subclavian Vein.
- G. The Internal Jugular Vein.
- H. H. The external Jugular, a portion of which has been removed; *a*, branch of communication which usually exists between it and the Facial Vein.
- I. The Axillary Plexus of nerves.
- K. The several branches of the Cervical Plexus of Nerves already described.
- L. The Nervus Accessorius.
- M. The Phrenic nerve.
- N. The Supra-scapular nerve from the Axillary Plexus.
- O. The External Thoracic nerve or External Respiratory, penetrating the conjoined fibres of the Scalenus Medius and the Scalenus Posticus D.
 - 1. The Supra-scapular Artery.
 - 2. The Transversalis Colli.
 - 3. The Ramus ascendens Arteriæ Thyroidæ. These vessels, together with the inferior Thyroid artery, generally arise from a short trunk, the Thyroid axis.
 Numerous absorbent glands are also found in these regions of the neck.

* Comprising the spaces C and D of Plate 6.

PLATE 10

Exhibits the parts which are brought into view on reflecting the Clavicular portion of the Pectoralis Major, and raising the Clavicle.*

- A. The Clavicular portion of the Pectoralis Major reflected.
- B. The Pectoralis Minor attached to—
- C. The Coracoid Process.
- D. Intercostal Muscle between the first and second Rib.
- E. The Subclavius Muscle.
- F. The Axillary Vein receiving the Cephalic Vein *a*.
- G. The Axillary Artery partially covered by the Axillary Vein and by the Axillary Plexus of Nerves H. Opposite the upper border of the Pectoralis Minor a short trunk arises from the Axillary Artery which gives off—
 - 1. The Thoracica Humeraria which runs parallel with the Cephalic Vein between the Pectoralis Major and the Deltoid Muscles.
 - 2. The Arteria-acromialis, which passes under the fibres of the Deltoid Muscle towards the Acromion.
 - 3. The Arteria Clavicularis. A portion of this branch has been removed.
 - 4. The superior or short Thoracic Artery, which ramifies beneath the Pectoralis Major.
- H. The Axillary Plexus of nerves partly concealing the Axillary Artery, giving off—
 - 5. Thoracic nerves which cross over the Axillary vessels and accompany some of their branches.
- I. I. Strong Aponeurosis connected with the Coracoid process C, the Clavicle and the first rib and continuous with the Fascia surrounding the Subclavius Muscle ;—a portion has been removed to expose the vessels and nerves.

* Comprising spaces F and G of Plate 6.





PLATE 11.

Represents the parts which are brought into view by reflecting the Mylo-Hyoideus Muscle.

- A. The left Mylo-hyoideus detached from the os hyoides and turned over the base of the lower jaw.
 - B. The anterior portion of the Digastricus Muscle turned down.
 - C. The Genio-hyoideus also reflected from the jaw.
 - D. The Genio-hyo-glossus muscle.
 - E. The Hyo-glossus.
 - F. The Stylo-maxillary ligament.
 - G. The Submaxillary gland drawn a little aside.
 - H. The Sublingual gland continuous with the Submaxillary.
 - I. Gustatory branch of the fifth pair of nerves.
 - K. Submaxillary ganglion (already exhibited in Plate 5.)
 - L. Ninth or hypoglossal nerve, giving off the descendens noni.
 - M. Branches of communication between the ninth and gustatory nerves.
 - N. Submaxillary duct, crossing obliquely beneath the gustatory nerve.
- 1,2,3,4. References the same as in Plate 8.
- 5. Sublingual Artery arising from the Lingual 2, at the anterior edge of the Hyo-glossus Muscle.

PLATE 12.

Right side of the neck, exhibiting the cervical portion of the Sympathetic Nerve. The Cervical Plexus is also seen ;—(its superficial branches were given in Plate 7) together with the origins of the Phrenic and Right Recurrent Nerves.*

- A. The Splenius Capitis.
- B. Digastricus.
- C. Stylo-Hyoidens.—These two muscles have been detached from the Os Hyoides and turned aside.
- D. Levator Scapulæ.
- E. Rectus Capitis Anticus Major.
- F. Scalenus Anticus.
- G. Arteria Innominata.
- H. Right Subclavian Artery,—1, Vertebral—2, inferior Thyroid divided.
- I. Right Common Carotid.
- K, K. External Carotid giving off—3, Superior Thyroid—4, Lingual—5, Facial—6, Occipital
- L. Internal Carotid.
- M. Part of the Nervus Vagus—giving off,—*a*, Right Recurrent which turns around the Right Subclavian Artery—*b*, branch to join the Cardiac Nerve from the Sympathetic.
- N. Formation of the Cervical Plexus by the 2nd, 3rd, and 4th Cervical Nerves.—Its superficial branches were given in Plate 7.
- O. Axillary Plexus formed by the four last Cervical, and the first Dorsal Nerve.
- P. Phrenic Nerve, formed usually by the third and fourth Cervical Nerves—7, branch of communication with the fifth Cervical.
- Q. Branch of communication between the first and second Cervical Nerves and the Sympathetic.

* In the plan of this sketch some assistance is acknowledged to have been derived from Scarpa's beautiful plate of the Sympathetic Nerve.



- R. Superior Cervical Ganglion of the Sympathetic Nerve giving off,—8, branches which ascend with the Carotid Artery into the skull. (Their further course was given in Plate 3, fig. 2.) 9, Branches to the Pharyngeal Plexus, whence also are derived the Nervi Molles, 10, 10.—11, Branches communicating with the first and second Cervical Nerves.—12, Branch of communication with the eighth and ninth Cerebral Nerves.—13, Branches to the Pharynx, Larynx, and Thyroid Gland.—14, Superior Cardiac Nerve.—15, Branch continued down behind the sheath of the Carotid Artery, to terminate in the second or middle Cervical Ganglion.
- S. The Middle Cervical Ganglion, situated opposite to the fifth or sixth Cervical Vertebra, just above the Inferior Thyroid Artery where it is crossing behind the Carotid.—It varies much in size, and is sometimes wanting.—It gives off 16,—Branches which accompany the artery to the Thyroid Gland. — 17, Branch joining the Recurrent Nerve.—18, Branches joining the Cervical Nerves.—19, Branch to join the Plexus on the Vertebral Artery.—20, Branches in front of and behind the Subclavian Artery to join the Inferior Cervical Ganglion.—21, Middle Cardiac Nerve.
- T. The Inferior Cervical Ganglion, situated between the transverse process of the last cervical Vertebra and the neck of the first Rib.—It gives off, 22, Branches which accompany the Vertebral Artery, to form a Plexus,—23, Branches to join the Axillary Plexus of Nerves,—24, Inferior Cardiac Nerve.

PLATE 13.

Left side of the neck, displaying the various parts which are situated deeply beneath the angle of the lower jaw, including more particularly the Glosso-Pharyngeal Nerve and the formation of the Internal Jugular Vein.

- A. The Hyo-Glossus—a portion of it has been removed to shew the Glosso-Pharyngeal nerve.
- B. The Genio-Hyo-Glossus.
- C. The Genio-Hyoideus.
- D. The Mylo-Hyoideus.—This with the last muscle is reflected.
- E. The Stylo-Pharyngeus.
- F. The Stylo-Glossus.
- G. The Sterno-Cleido-Mastoideus divided and turned aside.
- H. The posterior portion of the Digastricus—the anterior portion has been removed.
- I. The Stylo-Hyoideus detached from the Os Hyoides.
- K. The Stylo-Maxillary Ligament.
- L. The Stylo-Hyoid Ligament.
- M. The Glosso-Pharyngeal Nerve, giving off—1, Branch to the Stylo-Hyoidens and Digastric Muscles,—2, Large branch to the Pharyngeal Plexus—3, Branch to the Stylo Pharyngeus Muscle—4, Branches to the Papillæ and mucous membrane of the tongue.
- N. External Maxillary or Facial Artery divided, giving off—*a*, Ascending Palatine which runs between the Stylo-Glossus, and the Stylo-Pharyngeus Muscles.
- O. Ninth or Hypo-Glossal Nerve giving off—5, The Descendens Noni which by its communications 6 6, with the first Cervical Nerves, forms loops in front of the Internal Jugular Vein, and the Carotid Artery. 7, Gangliform Plexus from which branches pass to the depressor muscles of the Os Hyoides.
- P. Nervus Accessorius, distributing filaments to the Sterno-Cleido-Mastoideus and Larynx (its further course has been shewn in Plate 7.)



- Q. Internal Jugular Vein.—The Anterior division receiving—8, The superior Thyroid — 9, The Lingual—10, The Facial—11, The Internal Maxillary.—It varies much in size, and in the number of veins which it receives;—it sometimes communicates with the External Jugular.
- R. Common Carotid Artery.
- S. The Sublingual Gland.
- T. The Styloid process.
- V V V. Cervical Plexus.
- W. Phrenic Nerve.

PLATE 14.

Is a plan of the relations which exist between the Internal Carotid Artery, the 8th and 9th Cerebral Nerves, and the Superior Cervical Ganglion as they are seen deeply situated upon the front of the Spine, immediately below the base of the Skull—also a view of the branches of the Nervus Vagus, and of the principal branches of the Subclavian Artery in the Neck. A section of the Skull has been made just in front of the Foramen Jugulare; the Sternum has been removed and the left Clavicle and Ribs sawn through.

- A.A. The Rectus Capitis Anticus Major attached to the Basilar Process which has been sawn through.
- B.B. Longus Colli.
- C. Rectus Capitis Lateralis.
- D. Scalenus Anticus.
- E. Arch of the Aorta.
- F. Arteria Innominata.
- G. Left Common Carotid.
- H.H. Internal Carotid—a portion has been removed.
- I. Left External Carotid.
- K.K. Left Subclavian giving off,—1, Vertebral,—2, Axis Thyroidea, from which proceed,—3, Inferior Thyroid,—4, Ramus Thyroideæ Ascendens,—5,5, Transversalis Colli,—6, Cervicalis Superficialis,—7, the Supra Scapular,—8, the Internal Mammary Artery.
- L. Portion of the Internal Jugular Vein.
- M. The Glosso-Pharyngeal Nerve.
- N.N. The Nervus Vagus—it gives off,—9, the Pharyngeal Branch which passes down, sometimes behind, and sometimes in front of the Internal Carotid to join the Pharyngeal Plexus,—10, the Superior Laryngeal Nerve which passes behind the Internal Carotid,—11, 11, 11, Cardiac Nerves.—12, 12, Recurrent Nerve, winding round the arch of the Aorta, close to the outer side of the Ductus Arteriosus.

O. The Nervus Accessorius, passing downwards and outwards over the internal Jugular vein and the Rectus Capitis Lateralis.

These three divisions of the Eighth pair of Nerves are firmly connected together, and emerging from the anterior part of the Foramen Jugulare pass out, the one behind the other, in the order enumerated—the Glosso-Pharyngeal being anterior to the others—the Nervus Accessorius the most posterior; at first they are all situated behind the internal Carotid Artery and afterwards pass between that vessel and the internal Jugular Vein.

P. The Hypo-Glossal Nerve leaving the anterior Condylloid Foramen behind and a little to the inner side of the Eighth pair; it passes in front of the Superior Cervical Ganglion and the internal Jugular Vein, and becomes firmly connected with the Nervus Vagus.

Q. The Superior Cervical Ganglion situated upon the Rectus Anticus Major, and partly covered by the internal Carotid, and by the Eighth and Ninth Cerebral Nerves.

R. Occipital Artery resting upon the Rectus Capitis Lateralis.

S. Ductus Arteriosus.

Fig. 1.

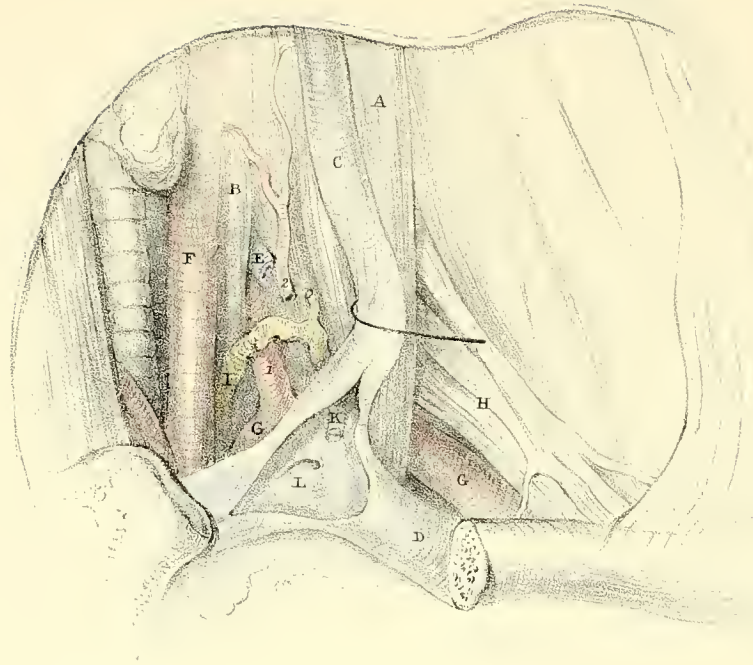


Fig. 2.



PLATE 15.

FIG. 1.

The Sternal extremity of the left clavicle has been removed for the purpose of bringing into view the course of the Thoracic Duct in the neck, and its termination in the Venous System.

- A. Scalenus Anticus.
- B. Longus Colli.
- C. The Internal Jugular Vein drawn aside.
- D. The left Subclavian. An aperture has been made into these veins at their point of junction.
- E. Vertebral Vein.—The lower portion has been removed to expose more completely the arch formed by the cervical portion of the Thoracic Duct.
- F. Common Carotid Artery.
- G.G. Subclavian Artery.
- H. Axillary Plexus of Nerves.
- I. The Thoracic Duct, emerging from the Chest and lying upon the Longus Colli, on a plane posterior to the left common Carotid and Subclavian Arteries, between which it is first seen in the neck. It arches over in front of the Vertebral Artery, and generally behind the Vertebral Vein and Inferior Thyroid Artery. A large absorbent trunk from the neck joins the Duct, prior to its termination in the angle formed by the union of the left Internal Jugular and Subclavian Veins.
- K. Two valves at the termination of the Thoracic Duct.
- L. Termination of the Vertebral Vein.
 - 1. Left Vertebral Artery.
 - 2. Part of the Inferior Thyroid Artery.

FIG. 2.

Exhibits a view of the distribution of the Laryngeal Nerves. For this purpose the Pharynx has been removed from the posterior walls of the Larynx, the right ala of the Thyroid Cartilage detached from the Cricoid, cut through and turned forwards.

- A. The Dorsum of the Tongue.
- B. Epiglottis.
- C. Pharynx.
- D. Œsophagus.
- E. Trachea.
- F. Right lobe of the Thyroid Gland.
- G. Right ala of the Thyroid Cartilage cut through and turned aside.
- H. Cricoid Cartilage.
- I. Extremity of the greater cornu of the Os Hyoides of the right side.
- J. Right Arytænoid Cartilage.
- K. Crico-Arytænoideus Lateralis
- L. Thyro-Arytænoideus.
- M. Arytænoidei Obliqui and Transversus Muscles.
- N.N. Crico-Arytænoideus Posticus divided, and each portion turned aside, to exhibit the Nerves beneath.
- O. Epiglottidean Gland.
- P. Superior Laryngeal Nerve,—the branches are represented which it gives off after it has pierced the Thyro-hyoideal Ligament.
 - 1. Branches to the mucous membrane about the Epiglottis and Rima, and to the Glandular Structure, O.
 - 2. Branches of communication with the Inferior Laryngeal Nerve.
 - 3. Branches to the Arytænoidei and Transversus Muscles.
- Q. Inferior Laryngeal or Recurrent Nerve, giving off
 - 4.4. Branches to the Trachea,
 - 5.5. Branches to the Œsophagus,
 - 6.6. Branches to join the Superior Laryngeal Nerve,
 - 7.7. Branches to the Crico-Arytænoideus Posticus Muscle,
 - 8. Branches to the Crico-Arytænoideus Lateralis,
 - 9. Branches to the Thyro-Arytænoideus,
 - 10. Small filament given off beneath the Crico-Arytænoideus Posticus, to the Arytænoidei Obliqui and Transversus.

Fig. 1.



Fig. 2.



PLATE 16.

FIG. 1.

A Portion of the Spinal Cord removed from the Vertebral Canal, exhibiting the anterior and posterior roots of the four last Cervical, and first Dorsal Nerves; and the junction of these to form the Axillary Plexus.

- A. The Theca Vertebralis opened and turned aside.
- B.B. The Ligamentum Denticulatum, separating the Anterior from the Posterior roots of the nerves.
- C. The Pia-Mater of the Cord.
- D. The Spinal Cord—The anterior Median and anterior Lateral Grooves are seen.
- E.E. The Anterior Roots.
- F.F. The Posterior Roots.
- G.G. The Ganglia connected with the Posterior Roots.
- H. One of the Anterior Spinal Nerves—a bristle is passed between it and the Ganglion connected with the corresponding Posterior Nerve.
- I. Junction of the four last Cervical and first Dorsal Nerves forming a thick cord, which expands into the Axillary Plexus and gives off
 - K. Supra Scapular Nerve,
 - L. Branches to the Deltoid and Pectoral Muscles,
 - M. External Cutaneous Nerve,
 - N. Median,
 - O. Internal Cutaneous,
 - P. Ulnar,
 - Q. Radial,
 - R. Circumflex,
 - S. Infra-Scapular,
 - T. Branches to the Latissimus Dorsi. Teres-Major and Infra-Spinatus,
 - U. Branches to the Axilla,
 - V. Branches to the Subscapularis.

- W. The External Thoracic Nerve.*
- X.X. Filaments from the Spinal Nerves, to join the Sympathetic.
- Y. A Ganglion of the Sympathetic.
- Z. First Intercostal Nerve.

FIG. 2.

A Portion of the Spinal Cord from the same region seen on its Posterior aspect—exhibiting the Posterior Median and Posterior Lateral Grooves.

- A.A. The posterior roots of the Spinal Nerves—the obtuse, thick, and parallel fibres by which they are attached to the posterior lateral grooves are strongly contrasted with the delicate converging filaments which form the roots of the Anterior Nerves.
- B. Grey substance of the Cord.

* The External Respiratory Nerve of Sir C. Bell.

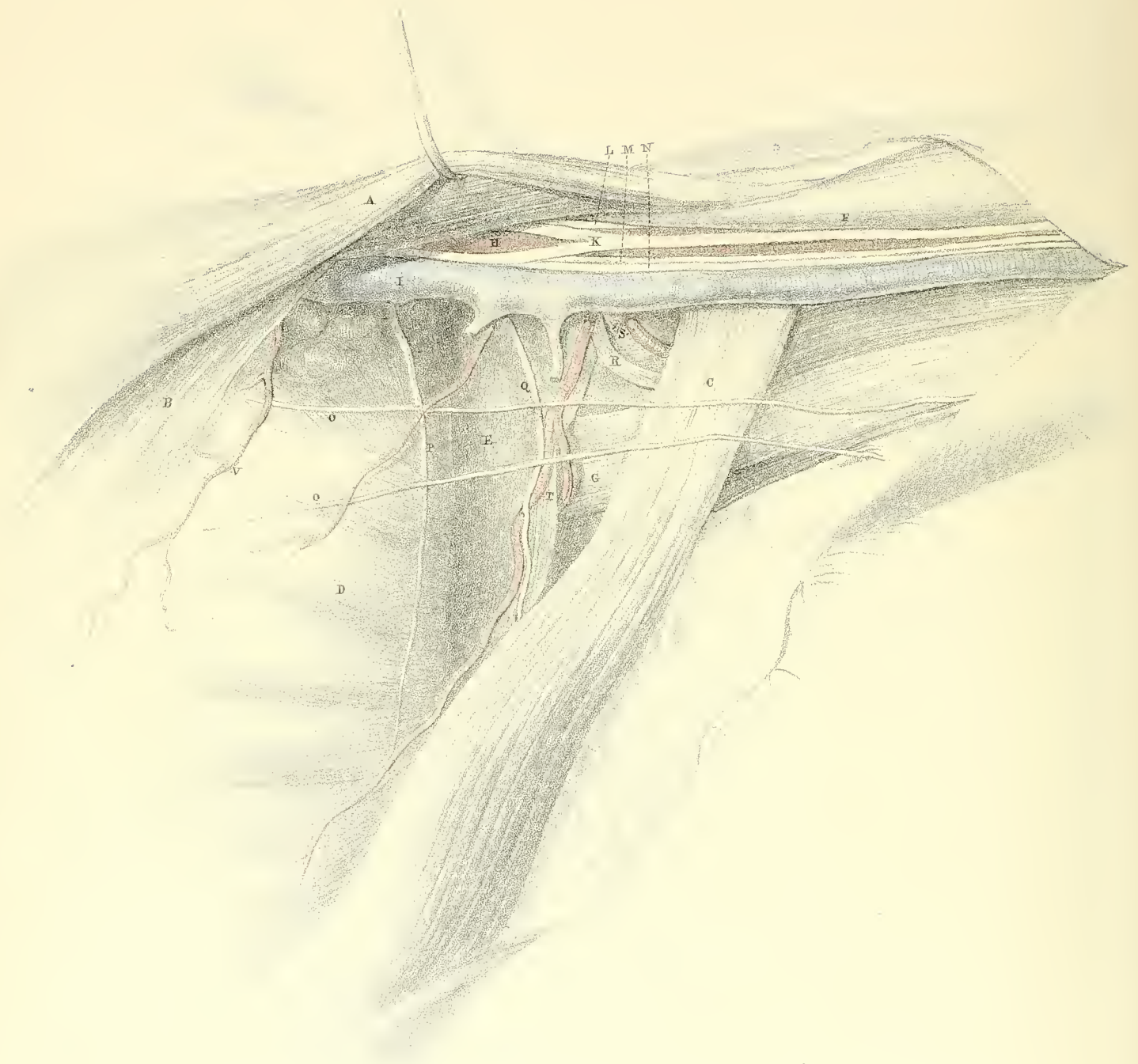


PLATE 17.

Represents a view of the region of the Axilla on the left side, after the removal of the adipose and cellular tissue.

- A. The lower edge of the Pectoralis Major raised by a hook.
- B. The Pectoralis Minor.
- C. Tendon of the Latissimus Dorsi and Teres Major.
- D. Serratus Magnus.
- E. Subscapularis.
- F. Biceps.
- G. Tendon of the long portion of the Triceps.
- H. Axillary Artery.
- I. Axillary Vein.
- K. Median Nerve.
- L. External Cutaneous.
- M. Ulnar.
- N. Internal Cutaneous.
- O.O. Intercosto-Humeral Nerves.
- P. External Thoracic Nerve.*
- Q. Infra-Scapular.
- R. Circumflex.
- S. Posterior Circumflex Artery and Vein.
- T. Infra-Scapular Artery dividing into its anterior and posterior branches.
- V. One of the inferior or long Thoracic Arteries.

* The origin of this Nerve is seen in the last Plate.

PLATE 18.

FIG. 1.

The integuments are removed from the bend of the left elbow-joint to exhibit the superficial parts in this region—the Fascia has been reflected from the anterior surface of the upper arm.

- A. Biceps.
- B. Crescentic Fascia from the tendon of the Biceps.
- C. Superficial Radial Vein.
- D. Median Veins.
- E. Superficial Ulnar Veins.
- F. Vena Mediana Basilica.
- G. Basilic Vein.
- H. Communication between the superficial and deep veins of the arm.
- I. Vena Mediana Cephalica.
- K. Cephalic Vein.
- L. Internal Cutaneous Nerve.
- M. External Cutaneous Nerve.
- N. Brachial Artery.
- O. Median Nerve.

FIG. 2.

The fascia of the fore-arm has here been removed—the supinator and extensor muscles separated from the flexors and pronators to exhibit the parts more deeply situated at the bend of the elbow joint.

- A. Tendon of the Biceps more exposed by the division of the crescentic fascia.
- B.B. Brachialis Anticus.
- C. Supinator Radii brevis.
- D.D. Pronator Radii teres.

Fig. 1.

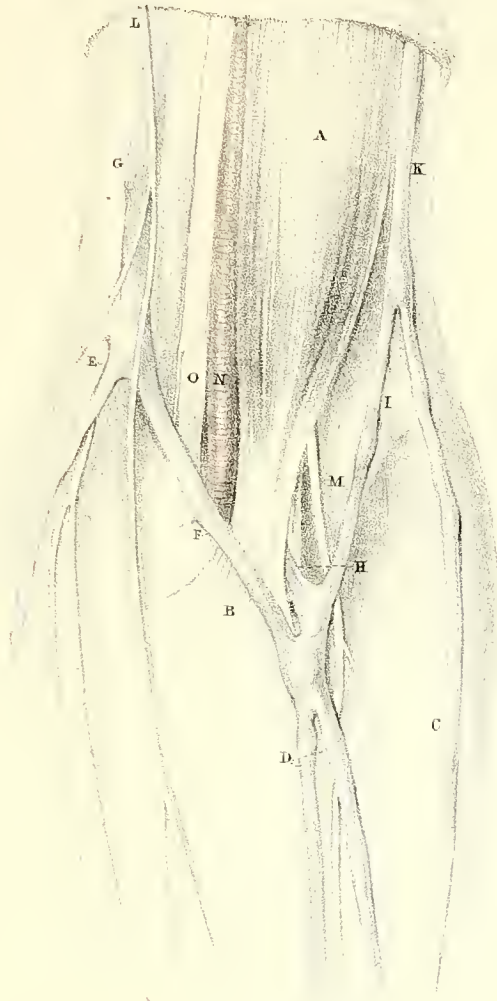


Fig. 2.



- E. Supinator Radii longus.
- F. Brachial Artery, dividing into
- G. Radial,
- H. Ulnar.
 - 1. Anastomotica Magna.
 - 2. Recurrens Radialis.
- I. Deep Radial Vein.
- K. Deep Ulnar Vein.
- L. Median Nerve passing between the two portions of the Pronator Radii Teres.
- M. External Cutaneous Nerve passing out between the Biceps and Brachialis Anticus.
- N. Radial Nerve passing down between the Brachialis Anticus and Supinator Radii Longus and dividing into the
- O. Posterior branch passing under the fibres of the Supinator Radii Longus,
- P. Anterior branch.

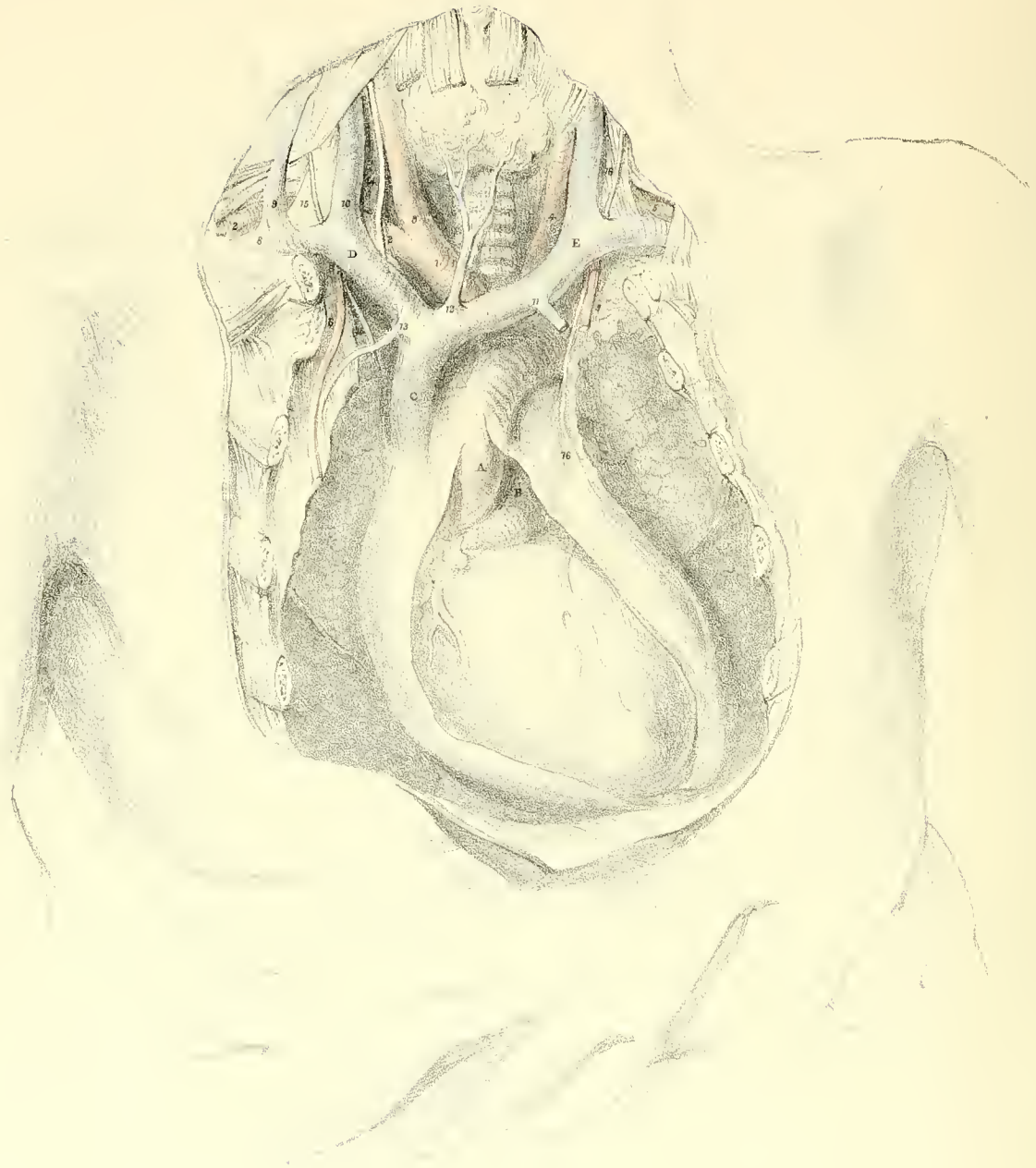


PLATE 19.

The Sternum, the inner extremity of each Clavicle and the Cartilages of the Ribs have been removed to exhibit most of the important objects contained in the superior aperture and upper part of the Chest. The Heart is exposed by an incision through the front of the Pericardium.

A. Arch of the Aorta.

B. Pulmonary Artery.

C. Vena Cava Superior.

1. Arteria Innominata.

2.2. Right Subclavian.

3. Right common Carotid.

4. Left common Carotid.

5. Left Subclavian.

6. Right internal Mammary Artery.

7. Left internal Mammary.

The situation and relative extent of the two Venæ Innominatæ are here shown.

8. Right Subclavian Vein,

9. Right external Jugular,

10. Right internal Jugular—these vessels uniting, form

D. The Right Vena Innominata.

E. Left Vena Innominata, receiving

11. The left internal Mammary Vein,

12. The inferior Thyroid Vein.

13. Right internal Mammary Vein, usually joining the commencement of the Vena Cava Superior.

14. Right Nervus Vagus.

15.15. Right Phrenic Nerve.

16.16. Left Phrenic Nerve.

PLATE 20.

This Sketch exhibits principally the Sympathetic and Nervus Vagus in the Chest. In order to bring the deep seated parts in this region into view, the Diaphragm was removed, the Ribs sawn through near their angles, and the right Lung turned over to the opposite side.

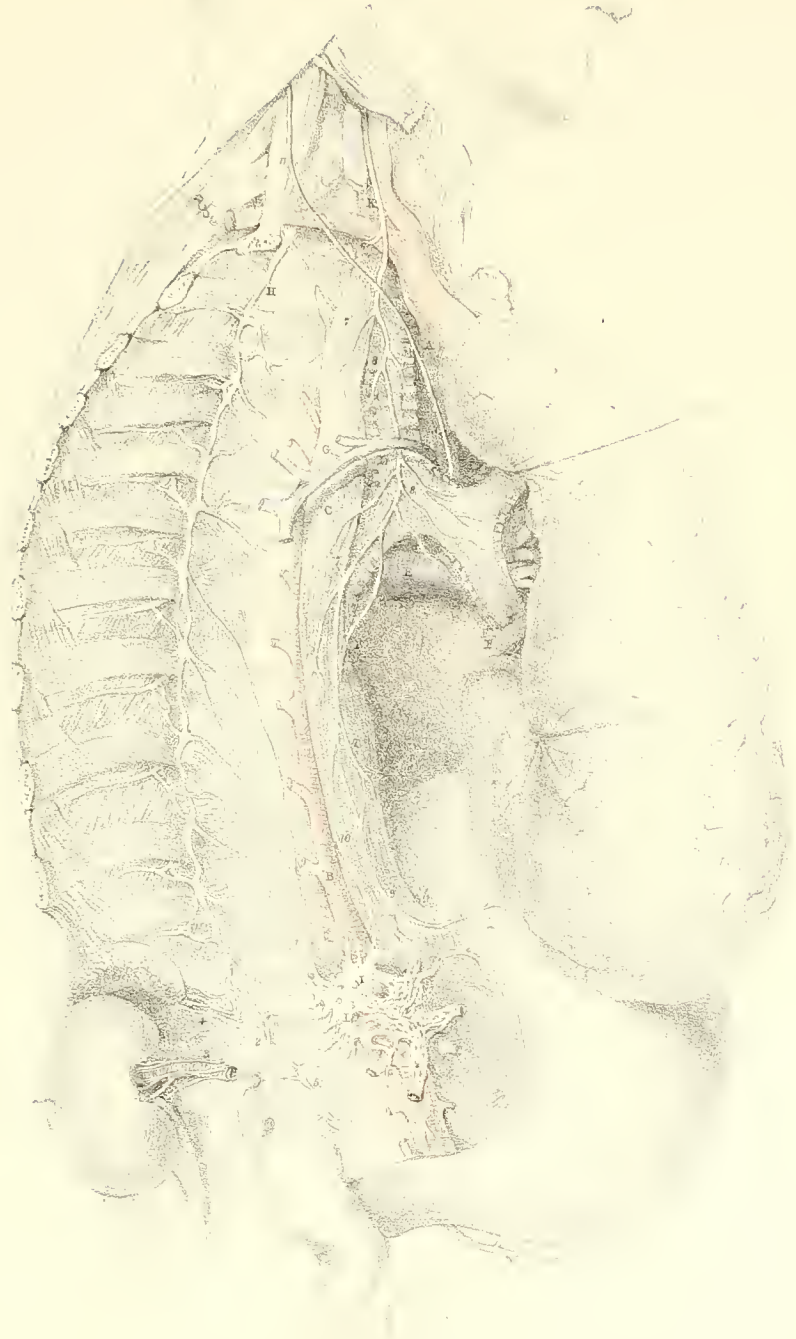
- A. Arch of the Aorta.
- B. Descending Aorta, partly concealed by
- C. The Œsophagus.
- D. Posterior Surface of the Trachea with its division into the Bronchi.
- E. Pulmonary Artery.
- F.F. Pulmonary Veins.
- G. Part of the Vena Azygos* arching over the right Bronchus, to terminate in the Vena Cava Superior.
- H. The Sympathetic Nerve forming a series of twelve Ganglia, situated either upon the heads of the Ribs, or in the Intercostal spaces, and covered by the Pleura, which has been dissected off; these Ganglia communicating with each other by intervening cords. Each Ganglion sends off externally one or two filaments to the corresponding Intercostal Nerve. Internally filaments arise from the four or five upper Thoracic Ganglia, and uniting with branches from the opposite nerve form a Plexus which sends its ramifications to the Heart, and large Vessels, to the Lungs and Œsophagus.—In conjunction with the Nervus Vagus, the Sympathetic forms an intricate Plexus to each of these organs.†

From the several Ganglia between the sixth and tenth inclusive, filaments arise which are distributed to the parts situated deeply in front of the Spine, and others which passing downwards and inwards unite to form a single trunk, the

1. Great Splanchnic Nerve, which passes through the fibres of the Diaphragm on the

* The origin and course of this Vessel are represented in the next plate.

† For a detailed account of the several Plexuses formed by these nerves, reference should be made to the Works of Scarpa and Swan.



outer side of the greater Crus, and terminates in the Semilunar Ganglion I. I. The two or three last Thoracic Ganglia send off internal filaments, which descend and unite to form

2. The Lesser Splanchnic Nerve, which penetrates the fibres of the Crus of the Diaphragm, and joins the Renal Plexus, 3.
 4. Plexus connected with the Renal Capsule, which together with the Kidney are detached and drawn aside to show
 5. Continuation of the Trunk of the Sympathetic Nerve into the Abdomen.
- I. I. Semilunar Ganglion and Solar Plexus.
- K. The Right Nervus Vagus,* continued from the Neck, giving off
 6. Recurrent,
 - 7.7.7. Branches to the Œsophagus,
 - 8.8. Branches to the Trachea and Bronchi—these as well as the other branches of the Nervus Vagus communicating with those of the opposite side, and with the Sympathetic, form the Œsophageal and Bronchial Plexuses.
 9. Continuation of the Right Nervus Vagus to the Stomach.
 10. Part of the Left Nerve—communications are seen with the Solar Plexus.
 11. Right Phrenic Nerve.

* The Cervical Portion of this Nerve is seen in Plate 14, and the distribution of the Recurrent in Plate 15.

PLATE 21.

The Anterior Parietes of the Chest have been removed as also the Thoracic and Abdominal Viscera to exhibit the Vena Azygos and Thoracic Duct.

A.A. The Vena Azygos commencing by

1. 1. Branches which establish a communication between it and the Lumbar and Renal Veins ; its origin being more or less connected with the Common Iliac and Inferior Cava.

In its course through the Chest, the Vena Azygos receives the eight or nine inferior Intercostal Veins of the right side,

2. The Semi Azygos which crossing the spine behind the Aorta, joins it at about the sixth Dorsal Vertebra.
3. 3. Oesophageal and Bronchial Veins.

4. Superior Intercostal Vein,—this vessel joins the Vena Azygos just before the latter arches over the right Bronchus, to terminate in the Superior Cava.*

The Semi-azygos also commences by Veins, 5, which connect it with the left Lumbar and Renal ; it enters the Thorax close to the Aorta, ascends on the left side of the Spine, and crosses it at the point above mentioned to join the Vena Azygos ;—it receives the five or six inferior Intercostal Veins of this side, and occasionally some of them above this point—a junction, as here represented, being often formed with the left Superior Intercostal Vein which terminates in the Left Subclavian.

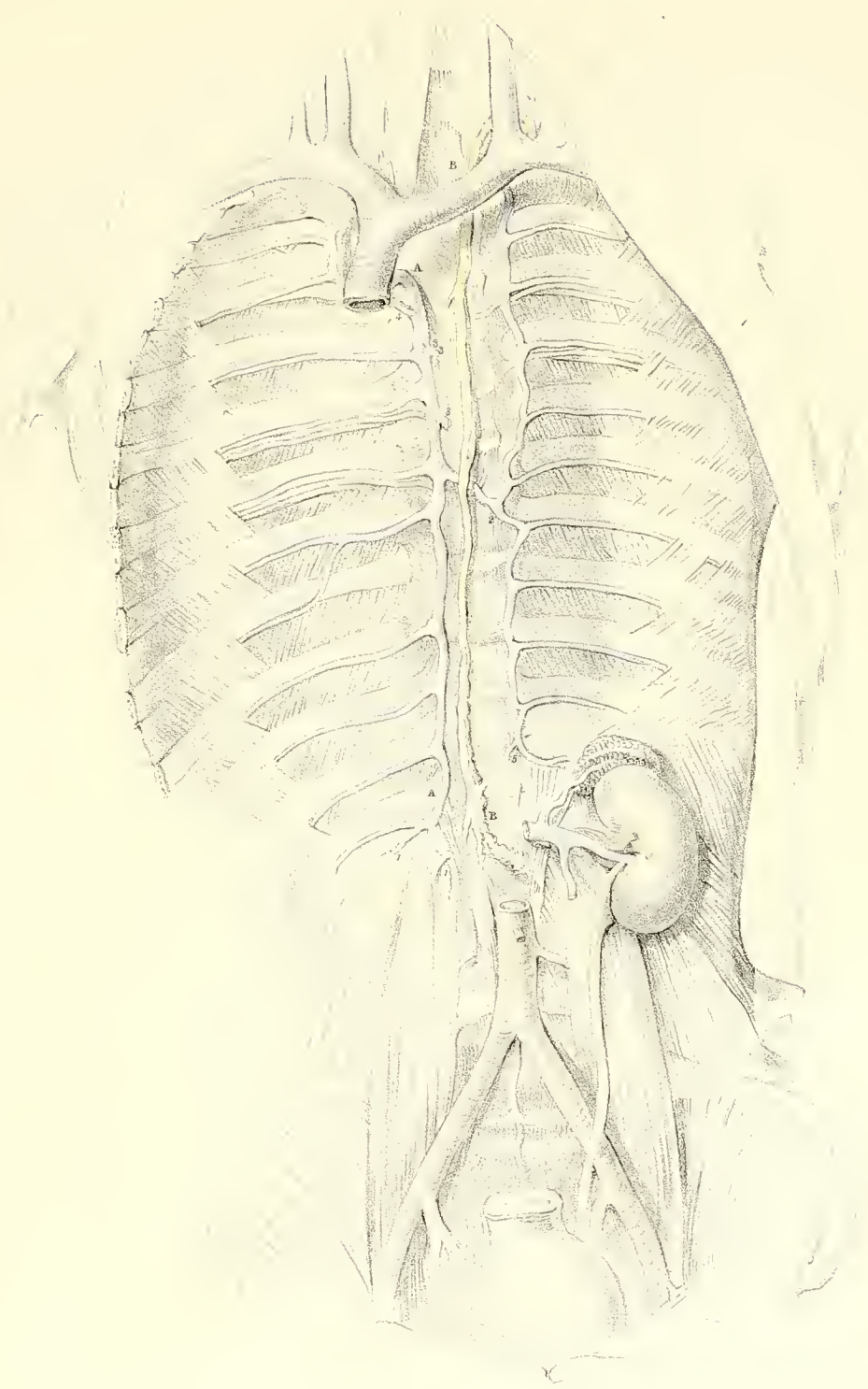
In some of the intercostal spaces the Nerve and Artery have been preserved with the Vein to show their usual relative position.

B.B. Thoracic Duct.†

In this sketch the left Renal Vein Artery and Ureter are shown in their ordinary relative situations—the Vein receives the Capsular and Spermatic of this side.

* The course and relations of this part of the Vena Azygos are represented in the last plate.

† Its course in the neck is represented in Plate 15.



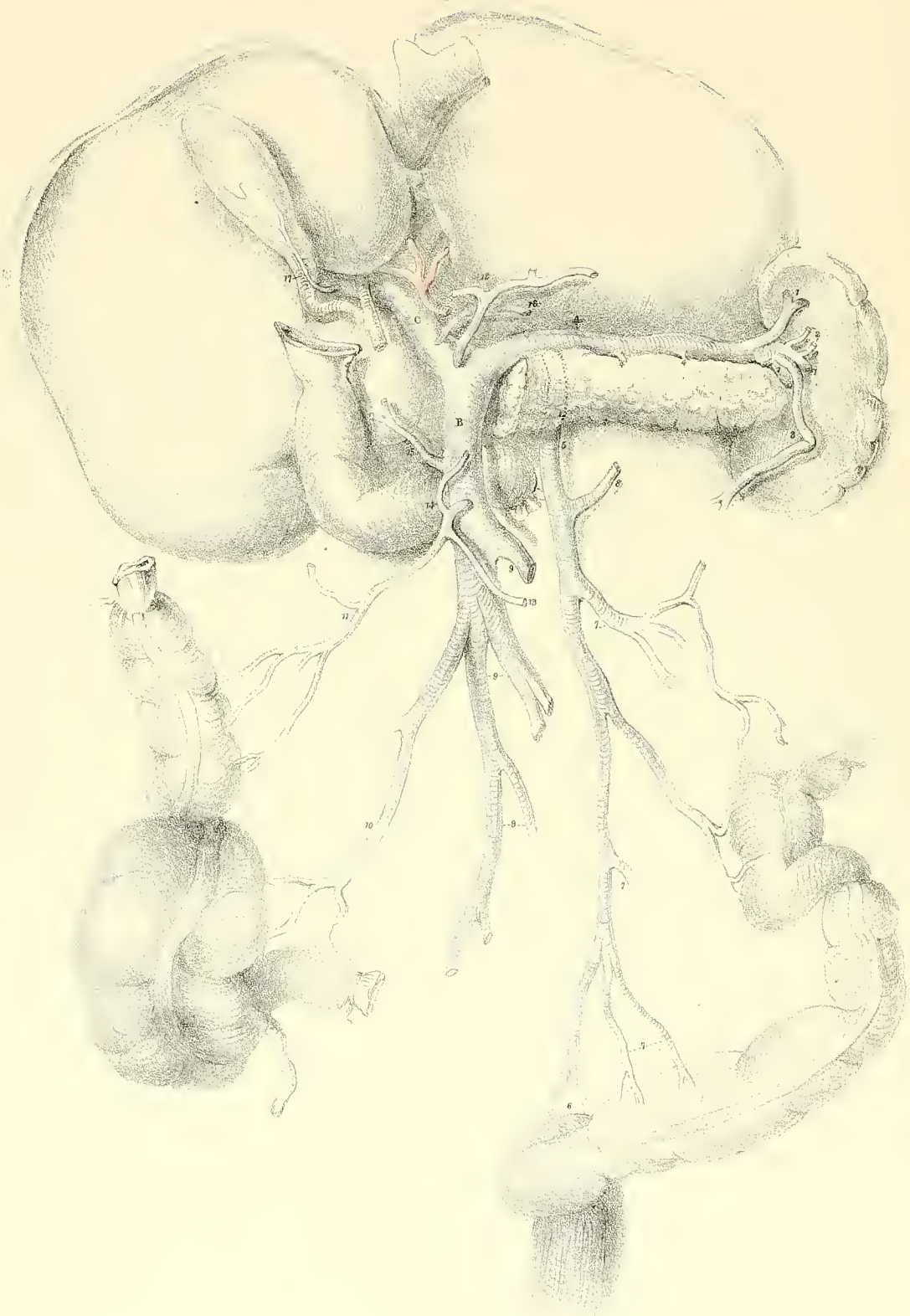


PLATE 22.

This sketch represents a plan of the system of the Vena Portæ. The vessel having been injected was removed from the body and left connected with some of the Viscera.

- A. The Splenic Vein receiving branches corresponding with those of the Artery, viz.,
- 1.1.1. Branches from the Spleen,
 - 2.2. Branches corresponding with the Vasa Brevia,
 3. Left Gastro-epiploic,
 - 4.4. Branches from the Pancreas.
 5. Inferior Mesenteric Vein.

The Inferior Mesenteric Vein receives also Branches corresponding with those of the Artery, viz.,

6. Branches from the Rectum forming the Superior or Internal Hæmorrhoidal Vein.
- 7.7.7. Branches from the Sigmoid Flexure of the Colon.
8. Branch from the descending Colon corresponding with the Arteria Colica Sinistra.

The termination of the Inferior Mesenteric Vein in the Splenic is represented in dotted outline.

- B. The Superior Mesenteric Vein receiving on its left side,
- 9.9.9. Branches from the small intestines corresponding with the arteries arising from the convexity of the arch formed by the Superior Mesenteric Artery.

On the right side the Superior Mesenteric Vein receives,

10. The Vena Ilio-colica,
11. Colica Dextra,
12. Colica Media,
13. Gastro-epiploica Dextra, which receives part of the blood from the Stomach, Omentum, and Duodenum,
14. Pancreatica Duodenalis, and
15. Vena Pylorica.

The Trunk of the Superior Mesenteric Vein thus formed, ascends in front of the transverse portion of the Duodenum, and behind the great extremity of the Pancreas which has been removed.—It here joins the Splenic to form the Vena Portæ; this large Vessel ascending between the Hepatic Artery and Biliary Ducts to the transverse fissure of the Liver, receives

16. The Vena Coronaria Ventriculi,

17. The Cystic Vein.*

* It may be observed that there is considerable variety in the size and mode of termination of the branches of the Vena Portæ in different subjects.

Fig 2.

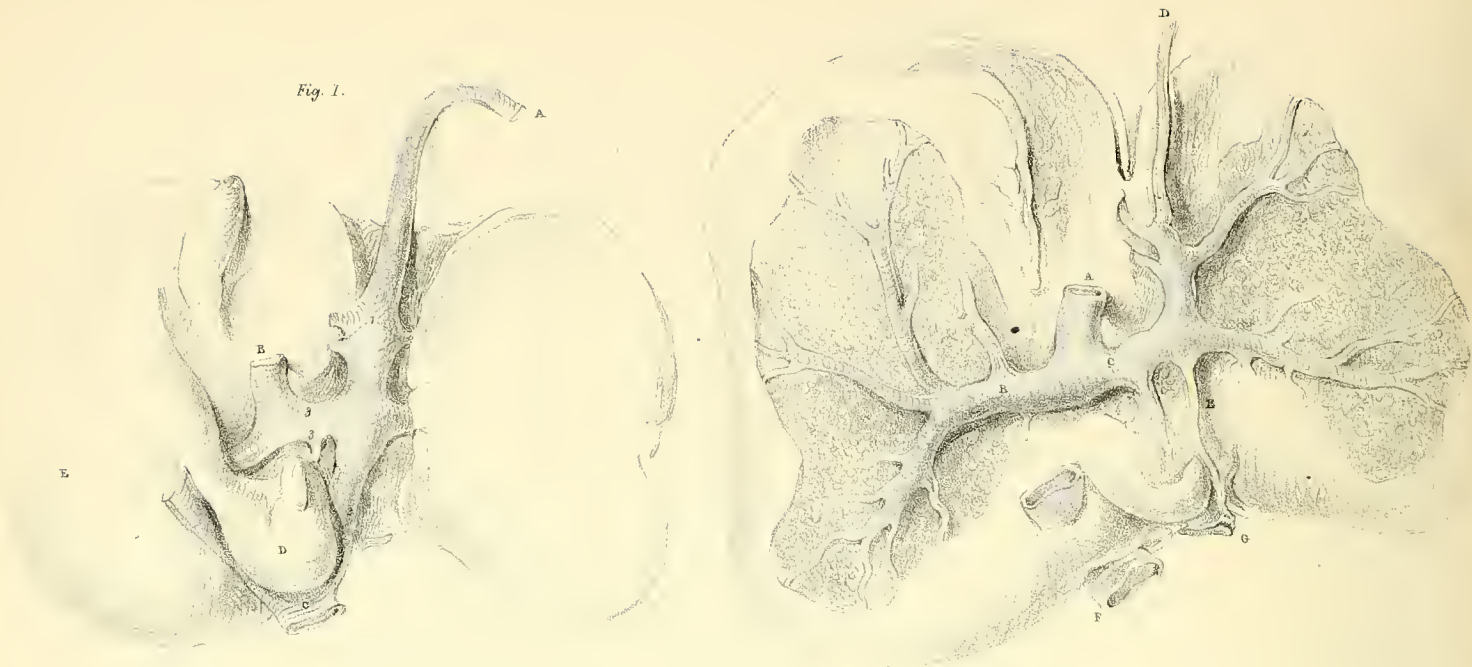
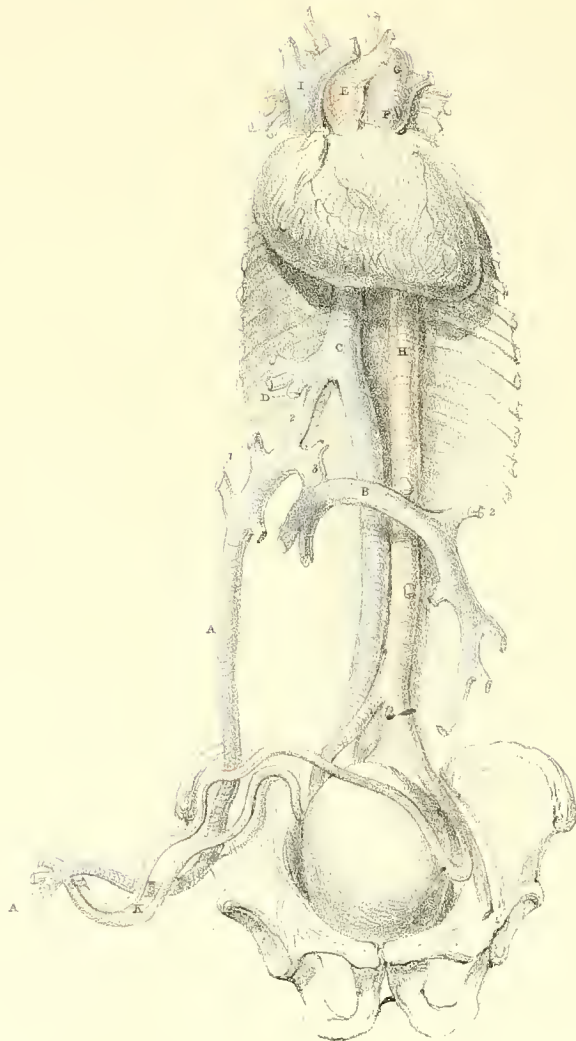


Fig 3.



P L A T E 23.

FIG. 1.

Under surface of the Liver of the Fœtus exhibiting the condition of the Umbilical Vein, and its connexion with the Vena Portæ and Vena Cava Inferior.

- A. The Umbilical Vein.
- B. Vena Portæ, divided just before it enters the transverse fissure.
- C. Portion of the Trunk of the Vena Cava Inferior, situated between
- D. The Lobulus Spigelii, and
- E. The Right Lobe of the Liver.

The Trunk of the Umbilical Vein, gives off,

- 1.1. Branches to the substance of the Liver,
- 2. The Ductus Venosus which joins the Vena Cava, or one of the Venæ Cavæ Hepaticæ ;
- 3. Larger Branch, to join the Vena Portæ.

FIG. 2.

Under surface of the Liver of the Adult, displaying the Vena Portæ and its connexion with the remains of the Umbilical Vein, also the obliterated Ductus Venosus.

- A. Vena Portæ, divided at the same point as in the Fœtal Liver.
- B. Right Branch,—its ramifications partly traced into the substance of the Liver.
- C. Left Branch, corresponding to the Right Branch of the Umbilical Vein, as seen in the Fœtal Liver, Fig. 1, 3.
- D. Remains of the Umbilical Vein.
- E. Obliterated Ductus Venosus.
- F. Vena Cava Inferior.
- G. One of the Venæ Cavæ Hepaticæ.

It will be seen in this Figure, that all that part of the Umbilical Vein remains pervious after birth, which intervenes between the two solid cords D and E, and becomes subservient to the Portal circulation through the left Lobe of the Liver.

FIG. 3.

Plan of the Fœtal Circulation, from a dried injected preparation.

- A. Umbilical Vein.
 - B. Vena Portæ.
 - C. Inferior Cava, receiving
 - D. The Venæ Cavæ Hepaticæ.
 - E. Arch of the Aorta.
 - F. Pulmonary Artery giving off right and left branches to the lungs, and
 - G. The Ductus Arteriosus joining the Aorta on its concave side, immediately after the origin of the left Subclavian.
 - H. Descending Aorta.
 - I. Vena Cava Superior.
 - K. Umbilical Arteries.
- The Umbilical Vein, A, giving off
- 1. Branches to the Liver,
 - 2. The Ductus Venosus,
 - 3. The Larger Branch, to join the Vena Portæ, B.

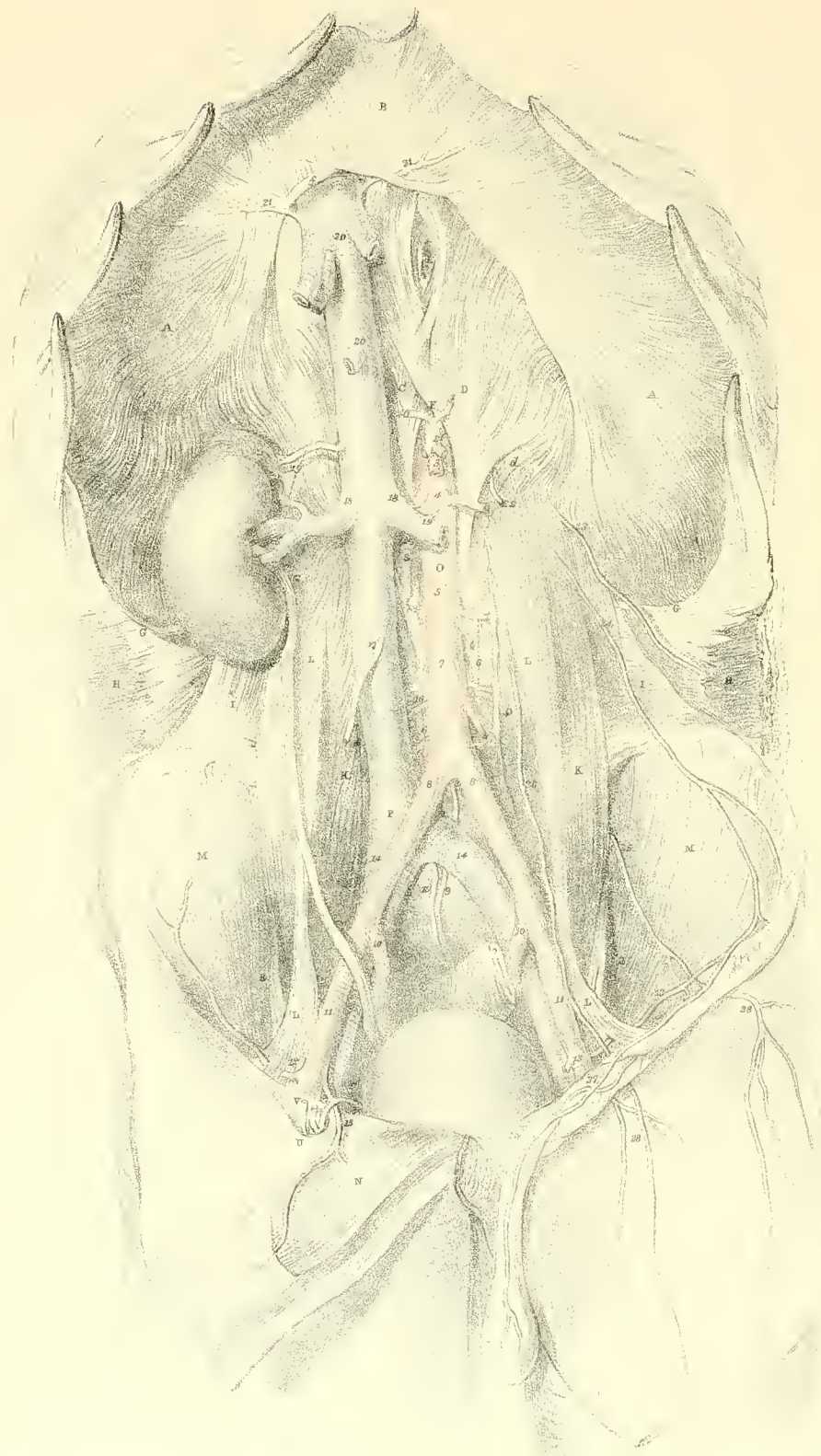


PLATE 24.

The whole of the Abdominal Viscera, with the exception of the right Kidney, have been removed for the purpose of displaying the Diaphragm and the deep seated parts in the Abdominal and Lumbar regions.

- A. A. Greater Muscle of the Diaphragm.
- B. Central Tendon.
- C. Greater Crus of the right side.
- D. Greater Crus of the left side. *d.* Smaller Crus.
- E. Œsophageal opening. F. Aortic opening. *f.* Aperture in the Central Tendon for the Vena Cava Inferior.
- G. Ligamentum Arcuatum.
- H. Transversalis Abdominis.
- I. Quadratus Lumborum.
- K. Psoas Magnus.
- L. Psoas Parvus.
- M. Iliacus Internus.
- N. Rectus Abdominis.
- O. Aorta. 11. Phrenic Arteries. 2. Cœliac. 3. Superior Mesenteric. 4. Renal. 5. Left Spermatic. 6.6. Lumbar. 7. Inferior Mesenteric.
- 8.8. Common Iliac Arteries.
- 9. Sacra Media.
- 10.10. Internal Iliac.
- 11.11. External Iliac. 12. Circumflexa Ilii. 13. Epigastric. On the right side is seen the course of this Vessel, and its relation to the Internal Ring, U, to the Spermatic Vessels, V, and to the Vas Deferens, W.
- 14.14. Common Iliac Veins. 15. Vena Sacra Media.
- P. Vena Cava Inferior.
- 16.16. Lumbar Veins.
- 17. Right Spermatic Vein.

- 18.18. Renal Veins.
- 19.19. Capsular Veins.
- 20.20. Venæ Cavæ Hepaticæ.
- 21.21. Phrenic Veins.
- Q. Lumbar portion of the left Sympathetic Nerve.
22. Great Splanchnic Nerve of the left side passing into the Abdomen between the Greater and Lesser Crus of the Diaphragm.*
23. Twelfth Dorsal Nerve.
24. External Inguino-Cutaneous Nerve.
25. Middle Inguino-Cutaneous Nerve.
26. Internal Inguino-Cutaneous, or, Genito-Crural.
27. Filaments from the External and Internal Inguino-Cutaneous Nerves accompanying the Spermatic Cord.
- 28.28. Filaments from the Inguino-Cutaneous Nerves distributed superficially upon the Thigh.
- R. Anterior Crural Nerve.
- S. Thoracic Duct in its progress between the Aorta and the right Crus of the Diaphragm.
- T. Right Ureter.
- U. Internal Abdominal Ring.
- V. Spermatic Artery and Veins.
- W. Vas Deferens.

* The origin and course of the Splanchnic Nerves in the Chest were delineated in Plate 20.

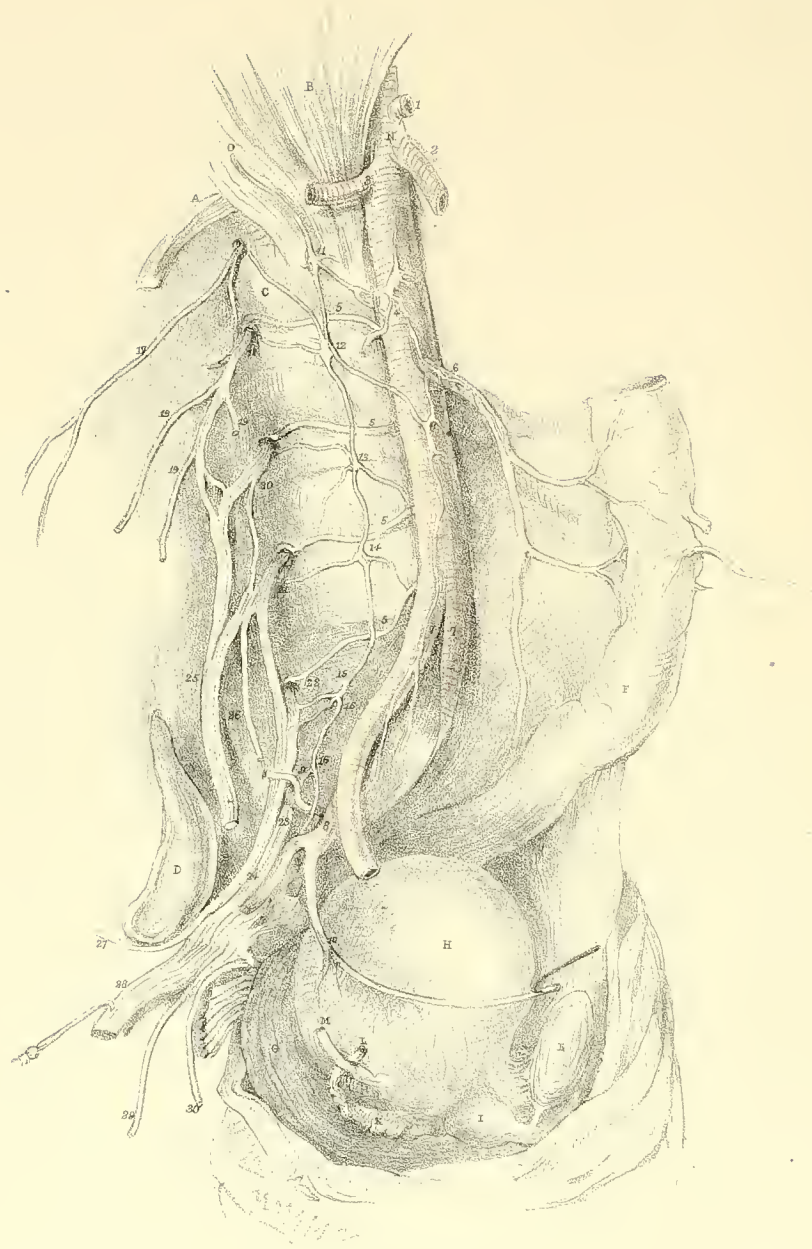


PLATE 25.

Represents the Lumbar Portion of the Sympathetic Nerve. The right Os Innominatum has been removed to exhibit more clearly the Sacral Plexus.

- A. Last Rib.
- B. Right Crus of the Diaphragm.
- C. First Lumbar Vertebra.
- D. Right Articular Surface of the Sacrum.
- E. Left Os Pubis.
- F. Sigmoid Flexure of the Colon.
- G. Rectum.
- H. Bladder.
- I. Prostate.
- K. Right Vesicula Seminalis.
- L. Vas Deferens.
- M. Ureter.
- N. Aorta—1. Cœliac. 2. Superior Mesenteric. 3. Right Renal. 4. Right Spermatic.
5. 5. 5. 5. Lumbar. 6. Inferior Mesenteric.
- 7. 7. Common Iliac Arteries.
- 8. Right Internal Iliac. 9. Ilio Lumbalis. 10. Umbilical.
- O. Sympathetic Nerve. 11. First Lumbar Ganglion. 12. 13. 14. 15. The other Lumbar Ganglia.
- 16. Continuation of the Sympathetic into the Pelvis.—Filaments are seen to connect the Lumbar Ganglia of the Sympathetic—from these also, and from their connecting cords, proceed filaments to form Plexuses upon the Aorta and its Branches.
- 17. Last Dorsal Nerve.
- 18. First Lumbar Nerve.
- 19. 19. Inguino-Cutaneous Nerves (represented in the last Plate).
- 20. Second Lumbar Nerve.

21. Third Lumbar Nerve.
22. Fourth Lumbar Nerve.
23. Fifth Lumbar Nerve.
24. Lumbo-Sacral Nerve, formed by the union of the last two.
25. Anterior Crural.
26. Obturator.
27. Gluteal, from the Lumbo-Sacral.
28. Great Ischiatic Nerve.
29. Smaller Ischiatic.
30. Pudendal.

PLATE 26.

FIG. 1.

The right Os Innominatum has been removed to exhibit more distinctly the termination of the Sympathetic Nerve upon the Sacrum and Coccyx. On the left side is a plan of the principal branches of the Internal Iliac Artery as prepared by partially separating the Os Innominatum at its junction with the Sacrum.

1. Last Lumbar Nerve.
2. First Sacral Nerve.
3. Second Sacral Nerve.
4. Third Sacral Nerve.
5. Fourth Sacral Nerve.
6. Fifth Sacral Nerve.
7. Last Lumbar Ganglion of the Sympathetic Nerve.
8. First Sacral Ganglion.
9. Second Sacral Ganglion.
10. Third Sacral Ganglion.
11. Fourth Sacral Ganglion.
12. Fifth Sacral Ganglion.
13. Single Ganglion, or Ganglion Impar, into which the termination of each Sympathetic Nerve is prolonged.

These Ganglia of the Sympathetic are seen to communicate with the Lumbar and Sacral Nerves, and to give off numerous branches to supply the parts within the cavity of the Pelvis.

- A. Abdominal Aorta.
- B. Right Common Iliac.
- C. Left Common Iliac.
- D. Sacra Media.
- E. External Iliac. F. Circumflexa Ilii. G. Epigastric.

- H. Internal Iliac, descending in front of the Lumbo-Sacral Nerve, 14.
- I. Ilio-Lumbalis.
- K. Sacro-laterales.
- L.* Umbilical Artery still remaining pervious for a short distance, and giving off small vessels to the Viscera of the Pelvis, especially to the Bladder.
- M. Obturator.
- N. Gluteal.
- O. Ischiatic.
- P. Pudendal.

FIG. 2.

The lower part of the Spinal Canal has been opened by the removal of the posterior parts of the rings of the Vertebrae to shew the termination of the Spinal Cord, and the posterior roots of the Lumbar and Sacral Nerves. †

On the right side the Os Innominatum has been removed to afford a view of the Lumbar and Sacral Plexuses.

- A. Eleventh Dorsal Nerve.
- B. Twelfth Dorsal Nerve.—The Ganglia upon the posterior roots of these Nerves are represented, together with their anterior and posterior branches beyond the Ganglia.
- C. First Lumbar Nerve.
- D. Second Lumbar Nerve.
- E. Third Lumbar Nerve.
- F. Fourth Lumbar Nerve. These four nerves unite to form the Lumbar Plexus, from which proceed: 1. 2. 3. Inguino-Cutaneous Nerves, 4. Anterior Crural, 5. Obturator.
- G. Fifth Lumbar Nerve. This unites with the fourth Nerve to form the Lumbo-Sacral Nerve, 6.
- H. First Sacral Nerve.
- I. Second Sacral Nerve.

* The condition of this vessel in the fœtus was shewn in Plate 23.

† The anterior roots of the Spinal Nerves are represented in Plate 16, as well as the filaments of communication with the Sympathetic. For a minute account of the distribution of these Nerves reference should be made to Mr. Swan's Work.

- K. Third Sacral Nerve. These three first Sacral Nerves being joined by the Lumbo-Sacral Nerve, 6, compose the Sacral Plexus. It gives off—7, the Gluteal—8, the Great Ischiatic—9, the Small Ischiatic—10, the Pudendal.
- L. Fourth Sacral Nerve.
- M. Fifth Sacral Nerve.
- N. Sixth Sacral Nerve. These Nerves are seen to unite with each other prior to their distribution.
- O. Filaments from the extremity of the Medulla Spinalis distributed to the Membranes of the Spinal Canal.

PLATE 27.

FIG. 1.

The Integuments together with the Fascia Superficialis, have been reflected from the lower part of the Abdomen and upper part of the thigh, to expose the Superficial parts connected with Inguinal and Femoral Hernia.

- A. Aponeurosis of the External Oblique Muscle.
- B. Poupart's Ligament.
- C. Outer column of the External Ring.
- D. Inner Column.
- E. Transverse Aponeurotic Fibres, or Intercolumnar.
- F. Fascia extending downwards over the Cremaster Muscle and Spermatic Cord, and derived more particularly from the Outer Column of the Ring. It becomes the Tunica Aponeurotica of Inguinal Hernia.
- G. Fascia Lata of the Thigh.
- H. H. Semilunar edge of the Fascia Lata.
- I. Fascia Cribrosa.
- K. Vena Saphena Interna, ascending over the lower part of the Semilunar edge to its termination in the Femoral Vein, and receiving,—1. The Superficial Epigastric,—2. The Superficial Circumflexa Ilii,—3. The External Pudic Vein.
- 4. Upper, or Inguinal Chain of Absorbent Glands.
- 5. Some of the Absorbent Vessels which penetrate the Fascia Cribrosa.
- 6. Lower, or Femoral Chain of Absorbent Glands.

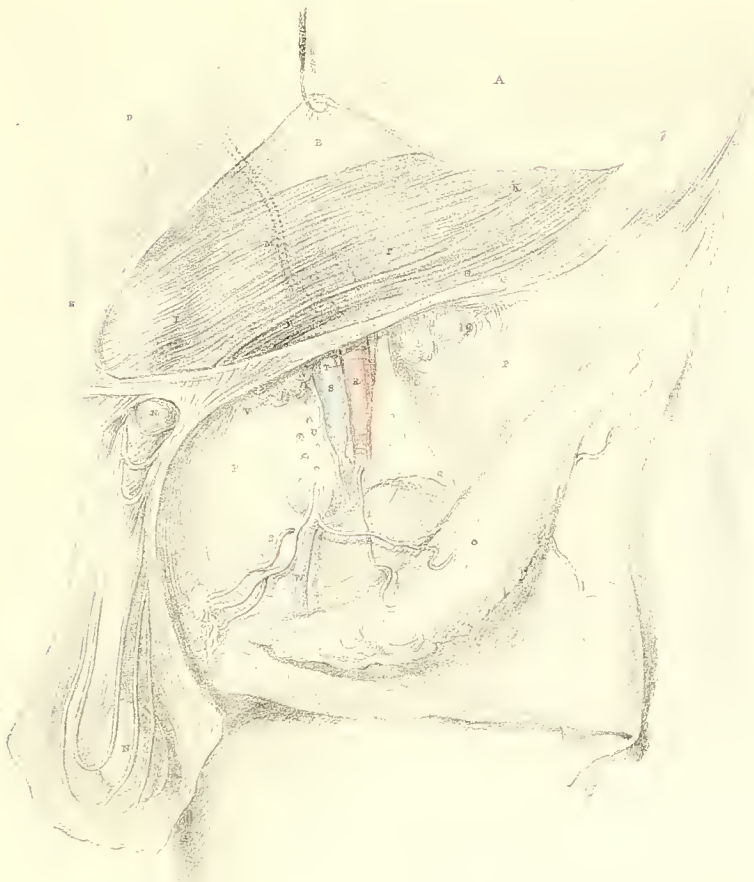
FIG. 2.

Exhibits the parts which are brought into view by the reflection of the lower part of the Aponeurosis of the External Oblique—this has been accomplished by making an incision along the line of Poupart's Ligament, and a little above the External Abdominal Ring.

Fig 1



Fig 2



Below Poupart's Ligament are represented some additional parts in connexion with Femoral Hernia—the upper part of the Semilunar Edge of the Fascia Lata having been detached and turned aside.

- A. Aponeurosis of the External Oblique.
- B. The lower part reflected and raised by a hook.
- C. Poupart's Ligament.
- D. Rectus.
- E. Pyramidalis—these muscles are covered by their sheaths.
- F. Internal Oblique.
- G. Lower fibres of the Internal Oblique, attached to the outer half of Poupart's Ligament.
- H. Origin of the Cremaster.
- I. Situation where the tendinous fibres of the Internal Oblique and Transversalis pass over the lower part of the Rectus Muscle to be attached to the Pubes.
- K. One of the Lumbar Nerves in its course between the Aponeurosis of the External Oblique, and the muscular fibres of the Internal Oblique.*
- L. Dotted curved line indicating the situation of the Internal Abdominal Ring, or Superior Aperture of the Inguinal Canal.
- M. Dotted lines, marking the course of the Epigastric Artery.
- N. Cremaster.
- O. Fascia Superficialis.
- P.P. Fascia Lata.
- Q. Upper part of the Semilunar Edge, or Falciform Process of the Fascia Lata detached from Poupart's Ligament, and from the Fascia Cribrosa, and turned aside.
- R. Femoral Artery.
- S. Femoral Vein.
- T. Septum between these two Vessels.
- U. Septum on the inner side of the Femoral Vein.
- V. Absorbent Gland sometimes occupying the space between the Femoral Vein and Gimbernat's Ligament.
- W. Vena Saphena Interna.—The Superficial Epigastric Vessels, 1, and the Superficial Circumflex have been turned down with the Integuments. 2. The External Pudic Vessels.

* The origin and course of this Spermatic Nerve, which passes through the External Abdominal Ring, is shewn in Plate 24.

PLATE 28.

Represents a view of the Gluteal and Popliteal Regions of the left side. The Gluteus Maximus and Gluteus Medius have been reflected.

- A. Gluteus Maximus.
- B. Gluteus Medius.
- C. Gluteus Minimus.
- D. Piriformis.
- E. Gemellus Superior.
- F. Gemellus Inferior.
- G. Obturator Internus.
- H. Quadratus Femoris.
- I. I. Adductor Magnus.
- K. Vastus Externus.
- L. L. Biceps.
- M. Semitendinosus.
- N. Semimembranosus.
- O. O. Gastrocnemius.
- P. Plantaris.
- Q. Great Sacro-Ischiatic Ligament.
 - 1. Gluteal Artery.
 - 2. Ischiatic.
 - 3. Coccygeal from the Ischiatic, penetrating the fibres of the Great Sacro-Ischiatic Ligament.
 - 4. Pudental Artery.
 - 5. 5. Branches from the Internal Circumflex Artery of the Femoral.
 - 6. 6. 6. Perforating Arteries of the Profunda.
 - 7. Gluteal Nerves.
 - 8. 8. 8. Great Ischiatic Nerve.



9. Small Ischiatic Nerve, or, Inferior Gluteal Plexus giving off— 10. 10. Branches to the Gluteus Maximus and Integuments. 11. Perineal Nerve. 12. 12. Internal and External Cutaneous Nerves, which descending upon the back of the Thigh are distributed to the Integuments about the Ham.
- R. Popliteal Artery—its Branches here represented, are — 13. 13. Muscular Branches. 14. Superior Internal Articular Artery. 15. Superior External Articular Artery. 16. 16. Sural Arteries.
- S. Popliteal Vein.
- T. Vena Saphena Externa.
- U. Popliteal Nerve.
- V. Peroneal Nerve.
17. 17. Cutaneous Nerves — the Nervi Sapheni Externi. The Branch from the Popliteal is also termed the Communicating Tibial.

